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ABSTRACT

A field test of the precommercial version of the Study Skills element of the Wisconsin Design for Reading Skill Development, developed at the Wisconsin Research and Development Center for Cognitive Learning, was conducted in 22 schools from 1971 to 1973. The purposes of the field test were to determine the effectiveness of the program in terms of student achievement, to document the degree to which recommended implementation procedures were followed, to determine the feasibility of the program for the elementary school, and to gather information useful for revisions. The results indicated that consistent improvement was shown by Study Skills students on program-embedded and standardized measures (schools with prior reading achievement below national norms showed greater improvement than schools with prior reading achievement above national norms); overall implementation was adequate; the program was generally well accepted, with schools with team organization having the most positive outlook toward the program; and formative findings indicated a need to reorganize and streamline the program. The appendixes include a statement of study skills and objectives, comparative performance data, and general reactions. (Author/MKM)

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Technical Report No. 341 (Part 1 of 2 Parts)

THE WISCONSIN DESIGN FOR READING SKILL DEVELOPMENT: STUDY SKILLS
A REPORT ON THE TYPE I FIELD TEST, 1971-1973

by Diane K. Sals and W. Donald Hubbard

Report from the Technical Services Section

Wisconsin Research and Development
Center for Cognitive Learning
The University of Wisconsin
Madison, Wisconsin

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WISCONSIN RESEARCH AND DEVELOPMENT
CENTER FOR COGNITIVE LEARNING

MISSION

The mission of the Wisconsin Research and Development Center for Cognitive Learning is to help learners develop as rapidly and effectively as possible their potential as human beings and as contributing members of society. The R&D Center is striving to fulfill this goal by

- conducting research to discover more about how children learn
- developing improved instructional strategies, processes and materials for school administrators, teachers, and children, and
- offering assistance to educators and citizens which will help transfer the outcomes of research and development into practice

PROGRAM

The activities of the Wisconsin R&D Center are organized around one unifying theme, Individually Guided Education.

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ABSTRACT

A field test of the precommercial version of the Study Skills element of the Wisconsin Design for Reading Skill Development, developed at the Wisconsin Research and Development Center for Cognitive Learning, was conducted in 22 schools from 1971 to 1973. Seventeen of the schools were situated in rural to suburban locations and had prior reading achievement at or above national norms. Five were located in an inner-city area and had prior reading achievement below national norms. Half of the schools had a multi-unit organization and half were organized on a self-contained basis.

The purposes of the field test were (1) to determine the effectiveness of the program in terms of student achievement, (2) to document the degree to which recommended implementation procedures were followed, (3) to determine the feasibility of the program for the elementary school, and (4) to gather information useful for revisions.

The results of the field test were as follows: (1) Consistent improvement was shown by Study Skills students on program-embedded and standardized measures. In all analyses schools with prior reading achievement below national norms showed greater improvement than schools with prior reading achievement above national norms. (2) Overall implementation was adequate but less than expected. Little relationship between adequacy of implementation and achievement was observed. (3) The program was generally well accepted, with some reservations in all cases. Schools with team organization had the most positive outlook toward the program. (4) Formative findings indicated a need to reorganize and streamline the program.

The field test demonstrated that even with the many imperfections of the precommercial version, the Study Skills program was a viable and effective addition to the elementary school curriculum. Although it had some drawbacks in terms of demands and priorities, teachers on the whole supported it because students enjoyed it and because the framework, by identifying essential skills, helped organize and evaluate instruction which in many cases was carried out previously on a casual basis, if at all.

I

INTRODUCTION

The Type I field test of the Study Skills element of the Wisconsin Design for Reading Skill Development, developed at the Wisconsin Research and Development Center for Cognitive Learning, was conducted from 1971 to 1973 in 22 schools. This field test represents the second phase in a three-phase developmental sequence for each element of the Design. The first phase, the pilot test, involved an intensive interactive study of the program's feasibility in three schools (Quilling & Wojtal, 1972). The Type I field test involved a greater number of schools and minimal implementation assistance. The last phase, the Type II field test, was conducted in several hundred schools which had no interaction with the Center except for a three-day introductory workshop (Hubbard, 1975).

Because of its scope Study Skills was developed and field tested in two tracks with the maps subarea and the graphs and tables subarea preceding the reference subarea by half a year. Subsequently the focus of the Type I field test was on the maps subarea and the graphs and tables subarea from Fall 1971 to Fall 1972 and on the reference subarea from Spring 1972 to Spring 1973.

II

DESCRIPTION OF THE PROGRAM

INTRODUCTION TO THE WISCONSIN DESIGN

Study Skills belongs to the broader framework of the Wisconsin Design for Reading Skill Development. A brief introduction to the basic operations and components of the Design follows. A more complete description may be found in the Rationale and Guidelines (Otto & Askov, 1974).

The Wisconsin Design is an objective-based system that provides both structure and some substance for an elementary school reading program, kindergarten through Grade 6. It represents a skill-oriented approach to the teaching of reading and is based on the assumption that if children master essential subskills they will be successful readers. A major purpose of the Design is to help teachers systematize and focus their reading instruction.

The Design consists of four major operations: identification of skills and objectives, assessment of pupil mastery, organization of instructional resources, and management of instruction and assessment according to student need. A discussion of each of the operations follows.

Skills and objectives. The framework of the Design is provided by the "Outline of Reading Skills," which is a scope and sequence description of essential reading skills for the elementary school. The skills are grouped into six main areas: Word Attack, Comprehension, Study Skills, Self-Directed Reading, Interpretive Reading, and Creative Reading. Each area is subdivided into levels; Table 1 shows how these levels correspond to grade levels.

TABLE 1

SKILLS BY AREA AND BY TRADITIONAL GRADE LEVEL

Skill Area	Grade						
	K	1	2	3	4	5	6
Word Attack	A	B	C	D	-	-	-
Comprehension	A	B	C	D	E	F	G
Study Skills	A	B	C	D	E	F	G
Self-Directed Reading	←	A-C	→	D-E		F-G	
Interpretive Reading	←	A-C	→	D-E		F-G	
Creative Reading	←	A-C	→	D-E		F-G	

An instructional objective has been developed for each skill in the outline and a terminal objective has been stated for the Word Attack, Comprehension, and Study Skills elements. The instructional objective for each skill prescribes or describes--depending on the type of objective--the expectations with regard to each specific skill. The terminal objective for an area sets expectations as to outcome once all of the instructional objectives have been mastered.

Two types of instructional objectives have been developed for the skill areas of the Design. There are behavioral, or prescriptive, objectives for the Word Attack, Comprehension, and Study Skills areas; and there are expressive, or descriptive, objectives for the Self-Directed, Interpretive, and Creative Reading areas. A behavioral objective identifies one behavior expected of all pupils in demonstrating mastery of the skill. The following is an example of a behavioral objective for Study Skills (Level C): "The child uses a key containing nonpictorial symbols (e.g., lines, dots) to derive information from maps." The expressive objectives in the Self-Directed, Interpretive, and Creative Reading areas on the other hand are descriptive statements which allow for individual reactions from each pupil. The following is an example of a descriptive objective for Self-Directed Reading (Level F-G): "Identifies with characters' emotional reactions."

Assessment. Criterion-referenced assessment devices have been developed for all of the behavioral objectives of the Design--the objectives for Word Attack, Comprehension, and Study Skills. Formal assessment is made with performance tests and the Wisconsin Tests of Reading Skill Development. The performance tests require both oral and motor responses and are developed only for those skills that cannot be measured with a group test. The Wisconsin Tests are paper-and-pencil tests which can be group-administered and scored either by hand or by computer. They are available in either booklet format (for all the objectives at a given level) or in single-sheet format (for a single objective). Typically, the booklets are used for break-in testing to find individuals' initial instructional levels; the single-sheet tests are used after skill instruction to assess individuals' attainment of criterion performance.

Informal assessment exercises are also available for Word Attack skills only and serve as supplements to the formal tests. For the expressive objectives in the Self-Directed, Interpretive, and Creative Reading areas, guidelines are provided for systematic exposures of all pupils to all of the skills.

Instructional resources. Since sufficient materials for teaching most of the essential reading skills are already available, the Design does not include instructional materials as such. Rather, it includes a component called the teacher's resource file, which is a means for organizing existing materials and activities.

There is a teacher's resource file for each skill area with behavioral objectives--Word Attack, Comprehension, and Study Skills.

Within each file, materials and activities are identified and organized by objectives. Teachers are expected to add whatever local resources they judge to be relevant to the objectives and to the needs of their pupils.

A single teacher's resource file is available for the Self-Directed, Interpretive, and Creative Reading areas, similar in organization to the other files, the main difference being that the material related to each skill is organized to provide breadth of exposure rather than mastery of prescribed criterion behavior.

Management. Three components of the Design are directed at providing assistance with its management and implementation. The Rationale and Guidelines, which covers all six skill areas of the Design, provides a rationale for the development of the Design and guidelines for its implementation. Separate teacher's planning guides are available for Word Attack, Comprehension, and Study Skills, with one guide for Self-Directed, Interpretive, and Creative Reading. The planning guides include the specific information teachers need to implement an objective-based approach to each skill area.

A final management component is the profile card. Separate profile cards are provided for Word Attack, Comprehension, and Study Skills for keeping a current record of each pupil's skill attainment status. When current, the profile card supplies information as to which behavioral objectives a child has and has not mastered. The one card for Self-Directed, Interpretive, and Creative Reading is designed for recording the number of exposures a child has had to each of the descriptive objectives.

The instructional management system of the Design is consistent with the more comprehensive system of educational programs called Individually Guided Education (IGE) (Klausmeier, Quilling, Sorenson, Way, & Glasrud, 1971). The IGE system is designed for the individual student in such a way that planned variations are made in what the student learns, the rate at which he learns it, and the way he learns it.

BEHAVIORAL OBJECTIVES OF THE FIELD TEST VERSION OF STUDY SKILLS

The version of Study Skills which was used for the Type I field test was not the one which is currently available. Subsequent to the field test numerous revisions were made, although the basic framework of the program was untouched. The details in the program description which follow pertain to the version used for the field test.[1]

---

[1] A description of the final program may be found in Chapter 2 of the Teacher's Planning Guide: Study Skills, Minneapolis: National Computer Systems, 1973.

The Study Skills area consists of three subareas: maps, graphs and tables, and reference skills. Within each of these subareas are a number of strands, or categories of related skills, that show sequential relationships of objectives across levels of the program. The field test version included 33 map skills, 19 graphs and tables skills, and 80 reference skills, a total of 132 skills. A statement of skills and objectives for the field test version is included in Appendix A.

The following is the terminal objective for Study Skills:

> The student upon completion of the program will be able to use study skills to locate and derive information from standard reference sources as well as from maps, graphs, and tables. By the time the student completes the Study Skills program, he should be independent in seeking and using information from a variety of sources. Children of average or above average ability should attain this objective by the end of middle school.

COMPONENTS OF THE FIELD TEST VERSION OF STUDY SKILLS

The following materials were utilized during the field test:

1. Rationale and Guidelines is a publication intended for central office personnel, principals, reading specialists, and unit leaders. It includes an introduction to the Design, an explanation of all components, general guidelines for implementation, and an outline of skills and behavioral objectives.

2. Teacher's Planning Guide: Study Skills, which is addressed primarily to teachers, focuses on specific aspects involved in implementing Study Skills

3. Teacher's Resource File: Study Skills has two components: a list of commercially available materials and a set of teacher-directed activities, both of which have been keyed to the specific objectives for Study Skills.

4. Wisconsin Tests of Reading Skill Development: Study Skills are paper-and-pencil, criterion-referenced tests with primarily a multiple-choice format. Specific paper-and-pencil tests were developed to measure each of the behavioral objectives in the graphs and tables subarea, most of those in the maps subarea, and about half of those in the reference subarea. For the remaining objectives criterion-referenced assessment was accomplished with individual performance tests or informal teacher observations. One form for the maps and graphs and tables tests and two forms for the reference tests were available for pre- and posttesting.

5. Pupil profile cards present a complete list of the study skills and a means for recording pupils' skill mastery and growth. They supply the information on students needed for instructional planning. Because of the volume of skills the field test version included two cards: one listing all the skills from A-D, and another listing those from D-G.

An additional component of the program is a staff development package, including audiovisual materials, which introduces the teacher to the program materials and processes of implementation. Because the package was not developed at the time the field test began, content outlines and sample materials served as the basis for oral presentations during the inservice workshops. Thus an incomplete but substantial inservice was provided for the field test.

III

THE FIELD TEST PROCEDURE

THE FIELD TEST POPULATION

The Center initially contacted 100 schools as possible participants in the Type I field test. Schools in a variety of locales were contacted in an effort to field test the Design under many different conditions. The goal was to include schools serving populations of varying achievement and socio-economic characteristics such as rural schools, suburban schools, and small city schools. A number of schools for which median performance was below national norms on standardized tests were sought as were a number for which typical achievements were average or better. Median performance for one or more years prior to 1970-71 on reading tests administered by the schools as part of their own internal testing programs was examined in reference to published norms for those tests where available. A final area of interest was the organization of the school. Because the Design is compatible with IGE and therefore its instruction management procedures should be easy to implement in the multiunit or team teaching situation, a number of schools organized to implement IGE were sought. Twenty-two volunteering schools were chosen to participate in the field test. All of the 22 schools had participated in the field test of Word Attack in the 1970-72 school years. Table 2 shows the distribution of types of schools according to the characteristics discussed above. See Appendix B for a description of the individual schools.

Seventeen schools had prior reading achievement levels at or above national norms for the tests generally used in those schools. Twelve of these served rural or small city populations in Wisconsin, while the remaining five were suburban schools in the Denver, Colorado, metropolitan area. The community's financial resources and the support given the latter five schools were well above average. Of the 17, 13 were implementing IGE to varying degrees and four were more traditionally organized.

Five of the remaining schools were located in a single geographical cluster in the inner-city area of Milwaukee, Wisconsin. Median reading performance for these schools was well below national norms prior to the field test. One of these schools was implementing IGE, and all the others had self-contained classrooms.

A Memorandum of Agreement (Appendix C) was signed by the Center and all field test schools at the outset of each field test year.

TABLE 2

DISTRIBUTION OF PARTICIPATING SCHOOLS ACCORDING TO LEVEL OF TYPICAL READING ACHIEVEMENT, TYPE OF LOCALE, AND OVERALL ORGANIZATION

	Implementing IGE			Not Implementing IGE			TOTAL
	Unitized at all grade levels	Unitized at three grade levels	Unitized for reading only	Self-contained classroom with grade level meetings	Self-contained classroom	Departmentalized according to subject area	
Schools with typically high reading achievement (rural, small city, suburban)	10	2	1	3		1	17
Schools with typically low reading achievement (inner city)			1		4		5
TOTAL	10	2	2	3	4	1	22

OBJECTIVES OF THE TYPE I FIELD TEST

The objectives of the field test were as follows:

1. To determine whether students who participated in the program showed greater achievement in study skills than students who did not, as indicated by program-embedded criterion-referenced tests and by norm-referenced standardized tests.
2. To document the degree to which the recommended implementation procedures were followed.
3. To determine the feasibility of the program from the points of view of acceptability, ease of scheduling, cost, and kindergarten applicability.
4. To gather formative feedback on all components of the program as a basis for recommending program revisions.

INSTRUMENTATION

Specific instruments were associated with each objective of the field test. Copies of instruments designed to measure objectives 2, 3, and 4 are located in Appendix D.

Objective 1: comparative achievement. Two types of instruments were used to determine whether implementation of the program enhanced student achievement in study skills: (1) several of the Wisconsin Tests were selected to measure mastery of behavioral objectives at various grade levels; (2) standardized tests--the Iowa Tests of Basic Skills and the Comprehensive Tests of Basic Skills--were used to provide a program-independent index of achievement.

Objective 2: implementation characteristics. Data relative to the implementation of the program were gathered primarily through personal interviews with staff members. Informal conversations and questionnaires provided some additional information.

Objective 3: program feasibility. Information regarding utilization practices and attitudes toward the program was gathered via interview guides used with teachers, principals, and central office personnel. Comment cards, which were completed periodically by teachers and mailed to the Center, provided much information on the usability of specific materials. Cost analyses of the field test version of the program are based on invoices and end-of-year inventories in conjunction with information taken from the monitoring interviews. The nature of the revisions was taken into account in estimating future costs of the materials.

Objective 4: revisions recommendations. The testing program for gathering baseline data for evaluation purposes was organized primarily to provide information concerning relative difficulty of selected skills within strands and levels of Study Skills. Formative feedback from teachers was gathered with the same instruments used for objectives 2 and 3.

METHOD

Objective 1: comparative achievement. Data for assessing the students' mastery of program objectives and their achievement on standardized tests were gathered in follow-up testing sessions conducted in Fall 1972 for the maps subarea and the graphs and tables subarea, and in Spring 1973 for the reference skills subarea. The Milwaukee schools conducted an additional follow-up testing session in Fall 1973. See Figure 1 for a calendar of the evaluation testing. Follow-up data were compared to a set of baseline data gathered at the same time the previous year from students in the field test schools who had not

1971	September	
	October	Staff inservice, Madison
	November	Maps, Graphs and Tables Evaluation 1: Baseline
	December	Maps, Graphs and Tables Break-in Testing
	January	
	February	
	March	
	April	
	May	Reference Skills Evaluation 1: Baseline
1972	June	
	(Summer vacation)	
	September	Reference Skills Break-in Testing
	October	
	November	Maps, Graphs and Tables Evaluation 2: Follow-up
	December	
	January	
	February	
	March	
	April	
	May	Reference Skills Evaluation 2: Follow-up
1973	June	
	(Summer vacation)	
	September	
	October	
	November	Maps, Graphs and Tables (Reference) Evaluation 3: Follow-up (Milwaukee only)
	December	

Figure 1. Schedule for evaluation testing.

participated in the Study Skills Program. Thus, for example, the effects of one year's implementation of maps skills in Grade 2 might be inferred through a cross-sectional comparison of the performance of second graders who had been in the program one year in 1972 with the performance

of second graders who had not been exposed to the program in 1971. This type of comparison assumes the similarity of the two successive grades on all pertinent matters except the use of Study Skills.

Objectives were sampled from each level of the subareas, and test sittings were organized to include either the tests of three Study Skills objectives or a subtest of a standardized achievement test. Students were assigned in groups of 20 to 30 per test sitting; the groups were drawn randomly from the total class list of a particular grade level within a school. In smaller schools students were occasionally assigned to more than one sitting because there were not enough students to form testing groups of the appropriate size. In addition to the test sittings, each student participated in break-in testing sessions for placement in the program. These sessions were conducted in December 1971 for maps and graphs and tables and in September 1972 for reference skills.

Administration of both types of instruments differed for the two school types, that in which median student reading performance was below grade level and that in which median student reading performance was at or above grade level. For each group of students, tests were selected to meet the following criteria after consultation with measurement specialists and directors of testing:

1. Average pupil performance should be at a level at least somewhat above that attainable by chance.
2. Average pupil performance should not be so high initially as to preclude improvement.
3. The standardized tests selected for evaluating the inner-city students should be interpretable in terms of norms for underachieving students.
4. Design tests should be usable for placement purposes with the particular student group and the teaching staff. Of particular concern was the test format in cases where median pupil performance was below grade level.

The field test design called for the same test sittings to be used in both the baseline testing and the follow-up testing. It was found in the baseline testing, however, that several of the Wisconsin Tests had mastery levels too high to permit improvement. Subsequently, the test sittings were revised for the follow-up testing. Baseline and follow-up test sittings are listed in Appendix E. Table 3 contains the number of Study Skills objectives assessed in each grade level for each subarea in schools of both levels of typical reading achievement.

The Comprehensive Tests of Basic Skills were selected for the Milwaukee schools to meet the third criterion in particular. A problem resulted at Grades 3 and 4, where the Study Skills test included items related to both map and reference skills, since the field test design called for introduction and evaluation of map skills one semester prior to reference skills. The schedule for evaluation testing in the Milwaukee schools was subsequently adjusted by adding an additional follow-up testing session in order to account for implementation of the complete program.

TABLE 3

NUMBER OF STUDY SKILLS OBJECTIVES ASSESSED BY GRADE, SUBAREA, AND LEVEL OF TYPICAL READING ACHIEVEMENT

	Schools with Lower Typical Reading Achievement (N* = 5)	Grade 1	2	3	4	5	6	Total
Subarea	Maps**	0	3	2	3	4	3	15
	Graphs and Tables**	0	2	4	3	2	6	17
	Reference	3	3	3	3	4	7	23
	Total	3	8	9	9	10	16	55
	Schools with Higher Typical Reading Achievement (N = 17)	Grade 1	2	3	4	5	6	Total
Subarea	Maps	0	2	2	4	2	6	16
	Graphs and Tables	0	1	0	2	4	2	9
	Reference	3	3	4	4	4	7	25
	Total	3	6	6	10	10	15	50

*N = number of schools
**assessed in two follow-up sessions

Figure 2 shows the standardized tests that were used for each category of students according to grade.

Schools with Typically Lower Reading Achievement

Subarea

Maps

Grades 3 and 4	Comprehensive Tests of Basic Skills,Form Q, Level 1, Test 9 (Items 21-30)--Study Skills
Grades 5 and 6	Comprehensive Tests of Basic Skills, Form Q, Level 2, Test 10 (Items 31-40, 46-50)--Using Graphic Materials

Graphs and Tables

Grades 5 and 6	Comprehensive Tests of Basic Skills, Form Q, Level 2, Test 10 (Items 21-30, 41-45)--Using Graphic Materials

Reference

Grades 3 and 4	Comprehensive Tests of Basic Skills, Form Q, Level 1, Test 9 (Items 1-20)--Study Skills
Grades 5 and 6	Comprehensive Tests of Basic Skills, Form Q, Level 2, Test 9--Using Reference Materials

Schools with Typically Higher Reading Achievement

Subarea

Maps

Grade 3	Iowa Tests of Basic Skills, Form 6, Level 9, Test W-1--Map Reading
Grade 4	Iowa Tests of Basic Skills, Form 6, Level 10, Test W-1--Map Reading
Grade 5	Iowa Tests of Basic Skills, Form 6, Level 11, Test W-1--Map Reading
Grade 6	Iowa Tests of Basic Skills, Form 6, Level 12, Test W-1--Map Reading

Graphs and Tables

Grade 3	Iowa Tests of Basic Skills, Form 6, Level 9, Test W-2--Reading Graphs and Tables
Grade 4	Iowa Tests of Basic Skills, Form 6, Level 10, Test W-2--Reading Graphs and Tables

(continued)

Graphs and Tables (continued)

Grade 5	Iowa Tests of Basic Skills, Form 6, Level 11, Test W-2--Reading Graphs and Tables
Grade 6	Iowa Tests of Basic Skills, Form 6, Level 12, Test W-2--Reading Graphs and Tables

Reference

Grade 3	Iowa Tests of Basic Skills, Form 6, Level 9, Test W-3--Knowledge and Use of Reference Skills
Grade 4	Iowa Tests of Basic Skills, Form 6, Level 10, Test W-3--Knowledge and Use of Reference Skills
Grade 5	Iowa Tests of Basic Skills, Form 6, Level 11, Test W-3--Knowledge and Use of Reference Skills
Grade 6	Iowa Tests of Basic Skills, Form 6, Level 12, Test W-3--Knowledge and Use of Reference Skills

Figure 2. Standardized tests used for the assessment of Objective 1, regarding comparative performance of program and nonprogram students.

The primary analysis involved distributions and comparison of means. Both raw scores and the percentage of students who performed at an 80 percent mastery level were used for assessment of comparative achievement on the Wisconsin Tests. For the standardized tests raw scores were translated into percentiles and grade point equivalents before being compared.

Objective 2: implementation characteristics. At the outset of the field test staff members of the participating schools were presented with the following list of requisites for effective implementation of the program:

1. Attendance of at least one local leader selected by the school system, preferably a reading consultant, at a training conference sponsored by the developer.
2. Total staff involvement at all age/grade levels.
3. Directed inservice and work sessions. Inservice sessions are designed to train personnel so that they have the knowledge necessary to implement the program. Work sessions involving some or all teachers are essential for keying local materials and organizing for initial instruction. Ongoing work sessions also provide an opportunity to identify and solve instructional management problems as they are encountered. A single day of inservice may suffice for staff who have used the Word Attack program. Intermediate level teachers and new staff, who have not used the Design before, will require at least one additional day of program orientation.

4. A variety of materials keyed to the behavioral objectives. A wide variety of instructional materials should be available for teaching skills at all levels so that the program has the flexibility necessary to meet a wide range of individual pupil needs.

5. Availability of Design materials according to the following plan:

   Rationale and Guidelines--1 per building

   Teacher's Planning Guide: Study Skills--1 per teacher

   Teacher's Resource File: Study Skills--1 per unit or 1 for every four teachers

   Wisconsin Tests of Reading Skill Development: Study Skills
   machine-scorable format--1 of appropriate level for each child plus 20 percent more for retesting

   single-sheet format--a complete set of ditto masters for each building

   Pupil Profile Cards--1 per pupil plus the number of new students projected annually. Notchers, skewers, and correction tape are also needed.

6. Booklet testing in at least Grades 2 to 6 at the outset of the program.

7. Retesting within four weeks at a higher or lower level for pupils who mastered all or all but one skill or who mastered either zero or one skill at the level first tested.

8. Testing of newly enrolled students within one month after entering school.

9. At least two hours per week for skill instruction.

10. Ad hoc skill grouping for periods of up to three weeks.

11. Assessment upon completion of instruction approximately every three weeks.

12. Record-keeping on a regular and current basis.

13. Monitoring of each child's skill development by a designated teacher.

In addition, the desirability of integrating Study Skills with ongoing instruction in social studies, language arts, science, and mathematics was expressed. The means for accomplishing this objective were not made explicit initially since one ancillary purpose of the field test was to identify approaches that schools experienced with IGE would develop.

These requisites were later used by field test monitors to evaluate the implementation of the program in the field. Monitoring visits were made to random samples of .5 (without replacement) twice each year by two different monitors. In addition, one monitoring visit to the entire population was conducted in Spring 1972. Thus each school was visited approximately three times during the course of the field test.

The analysis pertaining to implementation characteristics involved the assignment of a weighting to each of the requisites in order to account for two factors: the relative importance of the requisite for effective implementation and the reliability of the information that was available to make the rating.

The following rating scheme was used:

1 = little or no attempt to meet requisite, i.e., no conditions mentioned under requisite were met

2 = less than adequate attempt to meet requisite, i.e., some conditions were met

3 = adequate but less than expected attempt to meet requisite, i.e., most conditions were met

4 = expected level of meeting requisite, i.e., all conditions were met

5 = more than expected effort to meet requisite, i.e., all conditions mentioned were met and additional school-generated conditions were met

The comparative performance of schools with the highest and lowest mean ratings was analyzed for evidence of a relationship between implementation and achievement.

Objective 3: program feasibility. Data relating to this objective were gathered during the monitoring visits mentioned above. Teachers, principals, and central office personnel were interviewed. An attempt was made to interview teachers who represented a cross-section of views, teaching styles, and grades. Comment cards were distributed to all teachers at the outset of the program to elicit detailed information on the usability of specific materials. Informal conversations and phone contact provided much supplementary information.

Objective 4: revisions recommendations. All of the data gathered through the methods described above were used for the formative purpose of specifying revisions for the commercial version of Study Skills. Also, data gathered from the break-in testing conducted in December 1971 and September 1972 were used.

In addition to the analyses mentioned previously under objective 1, item analyses and test intercorrelations were drawn and all teacher comments and suggestions were compiled periodically.

Table 4 contains a summary of the data-gathering procedure.

TABLE 4

SUMMARY OF DATA-GATHERING PROCEDURE

Objective	Instrumentation	Schedule	Primary Analysis
1. Study skills achievement			
A. Skill mastery	Wisconsin Tests of Reading Skill Development	Baseline November 1971: maps, graphs and tables May 1972: reference skills Follow-up 1 November 1972: maps, graphs and tables May 1973: reference skills Follow-up 2 (Milwaukee only) November 1973: maps, graphs and tables*	Distributions and comparisons of means
B. Norm-referenced performance in general study skills	Comprehensive Tests of Basic Skills or Iowa Tests of Basic Skills		
2. Implementation characteristics	Staff interviews	Three monitoring visits to each school between March 1972 and May 1973	Descriptive analysis
3. Program feasibility	Staff interviews, questionnaires, inventories, comment cards	Three monitoring visits between March 1972 and May 1973	Descriptive analysis
4. Revisions specifications	Wisconsin Tests of Reading Skill Development	Maps, graphs and tables November 1971: baseline data December 1971: break-in testing Reference skills May 1972: baseline data September 1972: break-in testing	Distributions and comparisons of means as well as inter-correlations
	Staff interviews, questionnaires, comment cards	Three monitoring visits between March 1972 and May 1973	Descriptive analysis

*plus reference skills in Milwaukee schools, grades 3-4 only

IV

RESULTS

OBJECTIVE 1: COMPARATIVE ACHIEVEMENT

Program-Embedded Tests

As a preliminary evaluation of the program's success as measured by the Design tests, a tally was made of the students' relative performance on individual skills by comparing the results from the baseline testing with the follow-up testing which took place one year later. For the actual mean scores by school, objective, and level of typical reading achievement see Appendices F through I. Table 5 contains the proportion of objectives for which the program students exceeded the non-program students in terms of raw score units. These proportions are reported by grade, subarea, and typical reading achievement level. The totals are weighted according to the number of tests administered.

TABLE 5

PROPORTION OF OBJECTIVES FOR WHICH FOLLOW-UP STUDENTS EXCEEDED BASELINE STUDENTS BY GRADE, SUBAREA, AND LEVEL OF TYPICAL READING ACHIEVEMENT

Schools with Lower Typical Reading Achievement (N* = 5)		Grade 1	2	3	4	5	6	Total**
Subarea	Maps	n.t.***	2/3	2/2	3/3	4/4	3/3	14/15
	Graphs and Tables	n.t.	2/2	4/4	3/3	2/2	6/6	17/17
	Reference	3/3	3/3	2/2	3/3	3/4	7/7	21/23
	Total**	3/3	7/8	8/9	9/9	9/10	16/16	52/55

Schools with Higher Typical Reading Achievement (N = 17)		Grade 1	2	3	4	5	6	Total
Subarea	Maps	n.t.	2/2	0/2	3/4	2/2	6/6	13/16
	Graphs and Tables	n.t.	1/1	n.t.	2/2	3/4	0/2	6/9
	Reference	2/3	3/3	1/4	4/4	4/4	5/7	19/25
	Total**	2/3	6/6	1/6	9/10	9/10	11/15	38/50

*N = number of schools
**weighted totals
***n.t. = no tests

The totals in Table 5 show that the follow-up versus baseline differences were greater in the field test schools with typically lower reading achievement. For all subareas and grades combined in these schools follow-up students performed better than their baseline counterparts on 52 of 55 (or 95 percent) of the objectives. For the schools with typically higher reading achievement positive differences favoring the follow-up students occurred on 38 of 50 (or 76 percent) of the objectives. The exceptions to this positive trend were in the third grade, maps and reference subareas, and in the sixth grade, graphs and tables subarea.

As a refinement to the analysis, the difference between the two sets of scores was studied. The differences were calculated as percentages of the total number of items for each test because the number of items per test varied from 10 to 24. For example, a follow-up mean of 16.5 exceeds a baseline mean of 12.5 by 20 percent if there are a total of 20 items on the test. Table 6 contains the mean percentage differences between the baseline data and the follow-up data.

TABLE 6

MEAN DIFFERENCES* BETWEEN BASELINE MEAN SCORES AND FOLLOW-UP MEAN SCORES BY GRADE, SUBAREA, AND LEVEL OF TYPICAL READING PERFORMANCE

	Schools with Lower Typical Reading Achievement (N** = 5)	Grade 1	2	3	4	5	6	Total***
Subarea	Maps		8.1	11.4	3.2	8.2	5.0	6.9
	Graphs and Tables		9.3	10.5	7.0	6.0	6.8	7.8
	Reference	3.5	9.4	3.7	7.0	6.0	5.0	5.6
	Total***	3.5	8.9	8.5	5.8	6.9	5.6	6.7

	Schools with Higher Typical Reading Achievement (N = 17)	Grade 1	2	3	4	5	6	Total
Subarea	Maps		5.0	-.8	3.6	1.3	3.7	3.0
	Graphs and Tables		2.0		5.2	5.0	-2.3	2.9
	Reference	1.1	1.7	-1.0	3.9	3.5	2.4	1.9
	Total***	1.1	2.8	-1.0	4.1	3.7	2.3	2.5

*composite of percentages of total items per test
**N = number of schools
***weighted totals

Follow-up program students from schools with typically lower reading achievement performed better than baseline students by an average of 6.7 percent of the test items. In all comparisons for this set of schools the program students did better than the baseline students by amounts that ranged from 3.2 percent to 11.4 percent. The more favorable comparisons were in the second grade and in the graphs and tables subarea.

Program students from schools with typically higher reading achievement performed better than baseline students on 12 of the 15 comparisons with an overall mean difference of 2.5 percent of the items for each test. The amount of difference between follow-up and baseline student achievement in this set of schools ranged from -2.3 percent to 5.2 percent.

Considering that the number of test items for each test range from 10 to 24 and the mean raw scores range from 5 to 20, a difference of 6.7 percent, for example, may indicate a mean difference of one or part of one item per test. Though the increases shown in Table 6 are not substantial, they are so consistently attained for all the grades and subareas for both levels of typical reading achievement that a univariate analysis of variance found them to be not a result of random effects.

Table 7 shows the results of the analysis of variance for both types of schools. The design included one between-subjects variable, grade, and one within-subjects variable, time of test administration. The unit of observation is a school. The most important outcome was that the multivariate F ratios were statistically significant ($p < .0001$) for the main effect of time of test administration. It is also to be noted that there was a significant grade main effect ($p < .0033$).

A final analysis of results on the program-embedded tests was a comparison of baseline and follow-up mastery of the specific objectives tested. Table 8 shows the mean differences between the two test sittings in terms of percentages of students mastering each objective. To master an objective the student had to meet the criterion of answering 80 percent or more of the test items correctly.

In schools with typically lower reading achievement the percentage of students mastering objectives was 10.3 percent greater for the follow-up students. In schools with typically higher reading achievement an overall improvement of 5.1 percent took place. For both groups of schools follow-up versus baseline mastery differences were smallest in the reference subarea.

In each analysis the program students with lower reading achievement levels performed better than their comparison group to a greater degree than did the program students with the higher reading achievement levels. This may be due in part to the fact that the first set of schools had 10 to 15 percent more room for growth than did the second set of schools. Baseline test results for the first set of schools showed a mean of 63.9 percent correct responses and 38.3 percent students mastering objectives. For the second set of schools 74.4 percent of the total responses were correct and 53.1 percent of the students mastered objectives tested.

TABLE 7

ANALYSIS OF VARIANCE SHOWING STATISTICAL SIGNIFICANCES OF MAIN EFFECTS OF TIME OF TEST ADMINISTRATION AND GRADE ON PROGRAM-EMBEDDED TEST RESULTS

Source	df	MS	F	p
Schools with Typically Low Reading Achievement				
Between				
grade	5	126.8709	4.8794	.0033
error	24	26.0013		
Within				
time of test administration	1	656.5718	35.3532	.0001
grade x time	5	9.5801	0.5158	.76
error	24	18.5717		
Schools with Typically High Reading Achievement				
Between				
grade	5	684.1717	21.5121	.0001
error	95	31.8040		
Within				
time of test administration	1	222.99	16.5175	.0001
grade x time	5	27.9705	2.0718	.076
error	95	13.5002		

TABLE 8

MEAN DIFFERENCES BETWEEN BASELINE AND FOLLOW-UP SCORES IN TERMS OF PERCENTAGE OF CHILDREN ATTAINING MASTERY STATUS ON PROGRAM OBJECTIVES BY GRADE, SUBAREA, AND LEVEL OF TYPICAL READING PERFORMANCE

	Schools with Lower Typical Reading Achievement	Grade 1	2	3	4	5	6	Total*
Subarea	Maps		13.1	17.4	2.3	12.6	8.8	10.5
	Graphs and Tables		17.0	17.8	12.9	4.8	9.8	12.5
	Reference	3.9	13.2	9.3	16.0	6.5	6.0	8.5
	Total*	3.9	14.1	14.9	10.4	8.6	8.0	10.3

	Schools with Higher Typical Reading Achievement	Grade 1	2	3	4	5	6	Total
Subarea	Maps		11.8	-2.5	9.2	3.0	6.5	6.3
	Graphs and Tables		5.2	--	10.5	9.3	-1.9	6.6
	Reference	2.2	3.1	-1.1	6.0	5.7	4.8	3.7
	Total	2.2	6.4	-1.6	8.2	6.6	4.6	5.1

*weighted mean

Standardized Tests

Since the standardized tests used for the two types of schools have different content and scoring characteristics, and since they were administered in different time sequences, their results are treated separately.

Schools with typically low reading achievement. The schedule for administration of the Study Skills subtests of the Comprehensive Tests of Basic Skills to schools with typically low reading achievement is shown in Table 9. Although reference skills was introduced to Grades 3 and 4 a semester later than the other subareas, it was evaluation-tested along with maps skills because both types of items belonged to the single test. The baseline of November 1971 measured the achievement of Grades 3 and 4 immediately prior to implementation of maps and graphs and tables skills and one semester prior to the introduction of reference skills. The first follow-up measured the effect of a year's implementation of maps skills and a brief exposure to reference skills. The second follow-up measured the effect of two school years' implementation of maps skills and one year, two months' implementation of reference skills. No items on graphs and tables were on the test; therefore graphs and tables achievement was not directly measured at these grade levels for these schools.

Profiles showing comparative achievement on standardized tests for Grades 3 and 4 in the schools with typically low reading achievement are shown in Figure 3. Detailed results by school are located in Appendices J and K.

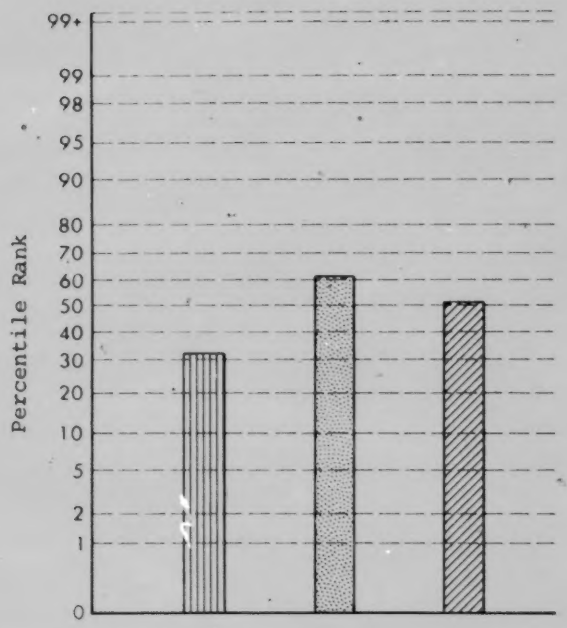
Grade 3 showed dramatic improvement by the first follow-up, meeting its grade equivalent of 3.2 for national norms. Some decrease was shown by the second follow-up. Overall gains for Grade 3 were .6 grade equivalent points and 19 percentile points. Grade 4 showed steady improvement with an overall gain of .4 grade equivalent points and 13 percentile points.

TABLE 9

STANDARDIZED TESTING SCHEDULE IN SCHOOLS WITH TYPICALLY LOW READING ACHIEVEMENT

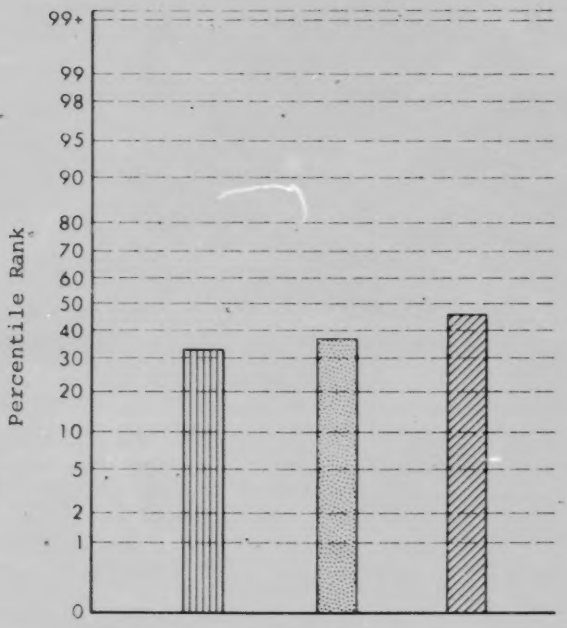
Evaluation Schedule	Grade	Subareas Tested
Baseline 11/71 1st Follow-up 11/72 2nd Follow-up 7/73	3, 4	Maps, Reference Skills
	5, 6	Maps, Graphs and Tables
Baseline 5/72 Follow-up 11/73	5, 6	Reference Skills

GRADE 3



	Grade Equivalents
Baseline 11/71	2.3
1st Follow-up 11/72	3.2
2nd Follow-up 11/73	2.9

GRADE 4



	Grade Equivalents
Baseline 11/71	3.2
1st Follow-up 11/72	3.3
2nd Follow-up 11/73	3.6

Figure 3. A comparison of percentile* and grade equivalent** means, 1971-73, on Comprehensive Tests of Basic Skills, Form Q, Level 1, Test 9 (Using Reference and Graphic Materials), at grades 3-4 in schools with typically low reading achievement.

*large city norms

**national norms; expected grade equivalents for the time of testing were 3.2 for Grade 3 and 4.2 for Grade 4

Table 10 compares baseline and final follow-up results for maps skills and for reference skills. This was done by separating items related to maps from those related to reference skills and computing raw scores for each content type. Relative gains were similar for both types of items. Grade 3 showed an improvement on 8 percent of the reference items and 10 percent of the maps items. Grade 4 showed an improvement of 13 percent on both types of items.

Comparative results on standardized tests for Grades 5 and 6 are shown in Figure 4. Substantial gains were shown for both grades on both tests. Grade equivalent differences ranged from .4 to .8. Percentile point differences ranged from 8 to 20. Table 11 shows the test results in terms of raw score means.

TABLE 10

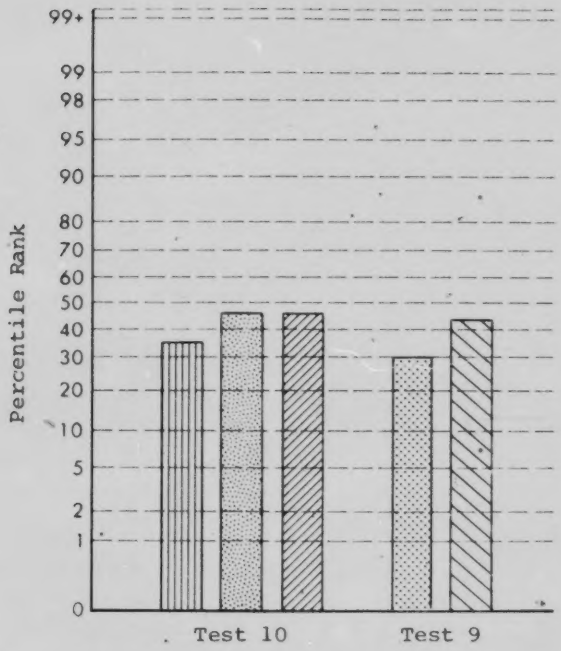
RAW SCORE MEANS ACCORDING TO CONTENT, NOVEMBER 1971 VERSUS NOVEMBER 1973, ON COMPREHENSIVE TESTS OF BASIC SKILLS, FORM Q, LEVEL 1, STUDY SKILLS TEST 9 (USING REFERENCE AND GRAPHIC MATERIALS) IN GRADES 3-4 IN SCHOOLS WITH TYPICALLY LOW READING ACHIEVEMENT

	No. Items		20		10		30	
	Date	N*	References Mean	References Std. Dev.	Maps Mean	Maps Std. Dev.	Total Test Mean	Total Test Std. Dev.
Grade 3	Baseline (11/71)	127	6.52	2.87	2.99	2.04	9.51	4.18
	Follow-up (11/73)	132	8.14	4.09	4.03	2.36	12.17	5.88
Grade 4	Baseline (11/71)	128	8.97	3.92	4.36	2.28	13.33	5.63
	Follow-up (11/73)	127	11.48	3.80	5.63	2.32	17.12	5.60

*number of students

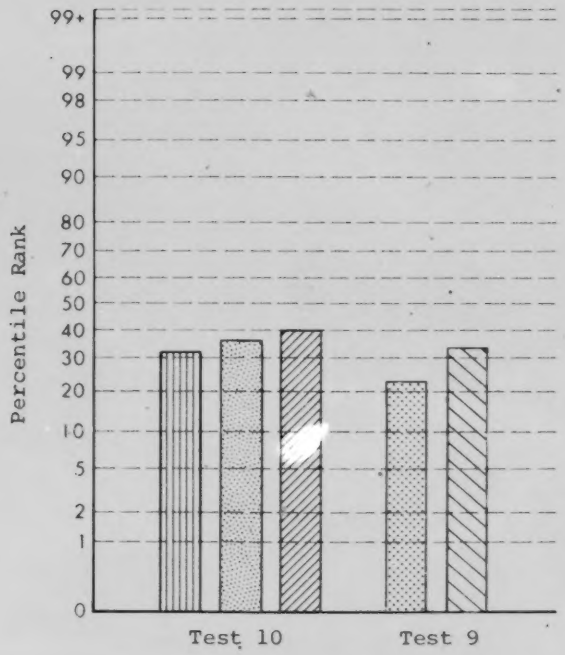
Schools with typically high reading achievement. The Study Skills subtests of the Iowa Tests of Basic Skills were administered to the schools with typically high reading achievement according to the regular schedule used for the general field test evaluation (see Figure 1). One subtest was available for evaluating the effects of implementation of each subarea at each grade level for Grades 3 to 6.

GRADE 5



		Grade Equivalents
Maps & Graphs & Tables		
	Baseline 11/71	4.0
	1st Follow-up 11/72	4.4
	2nd Follow-up 11/73	4.4
Reference Skills		
	Baseline 5/72	4.3
	Follow-up 5/73	5.0

GRADE 6



		Grade Equivalents
Maps & Graphs & Tables		
	Baseline 11/71	4.6
	1st Follow-up 11/72	4.8
	2nd Follow-up 11/73	5.0
Reference Skills		
	Baseline 5/72	4.6
	Follow-up 5/73	5.4

Figure 4. A comparison of percentile* and grade equivalent** means, 1971-73, on Comprehensive Tests of Basic Skills, Form Q, Level 2, Test 10 (Using Graphic Materials) and Test 9 (Using Reference Materials), at grades 5-6 in schools with typically low reading achievement.

*large city norms

**national norms; expected grade equivalents for the time of testing were the actual grade plus .2 for Test 10 and the actual grade plus .8 for Test 9

TABLE 11

RAW SCORE MEANS, BASELINE VERSUS FOLLOW-UP, ON COMPREHENSIVE TESTS OF BASIC SKILLS, FORM Q, LEVEL 2, IN GRADES 5-6 IN SCHOOLS WITH TYPICALLY LOW READING ACHIEVEMENT

		Study Skills Test 10 Using Graphic Materials			Study Skills Test 9 Using Reference Materials			
No. Items			30			20		
	Date	N*	Raw Score Mean	Std. Dev.	Date	N	Raw Score Mean	Std. Dev.
Grade 5	Baseline (11/71)	135	11.93	4.02	Baseline (5/72	132	7.68	3.61
	Follow-up (11/73)	123	14.02	4.99	Follow-up (5/73)	136	10.39	4.72
Grade 6	Baseline (11/71)	137	14.96	6.05	Baseline (5/72	125	9.05	4.05
	Follow-up (11/73)	123	17.40	5.82	Follow-up (5/73)	139	10.31	4.11

*number of students

The comparative results are shown in Figure 5. Detailed results by school are located in Appendices L and M. As the data in Figure 5 indicate, in no comparison did the baseline students perform better than the program students. In five of the 12 comparisons, all of them pertaining to maps and graphs and tables, there was no difference in the grade equivalents for the program versus the non-program students. In all five of these cases the mean raw scores were greater for the program students than for the non-program students. In the other six cases, the positive differences in grade equivalents ranged from .1 to .3 with an overall mean of .1. Reference skills alone showed positive differences at all grade levels.

OBJECTIVE 2: IMPLEMENTATION CHARACTERISTICS

To evaluate the implementation of the program in the field test schools, the requisites of implementation were used by the field test monitors. A combined rating was obtained for every school on each of the thirteen requisites (see page 18 for method employed). These ratings are summarized in Figure 6 and Table 12.

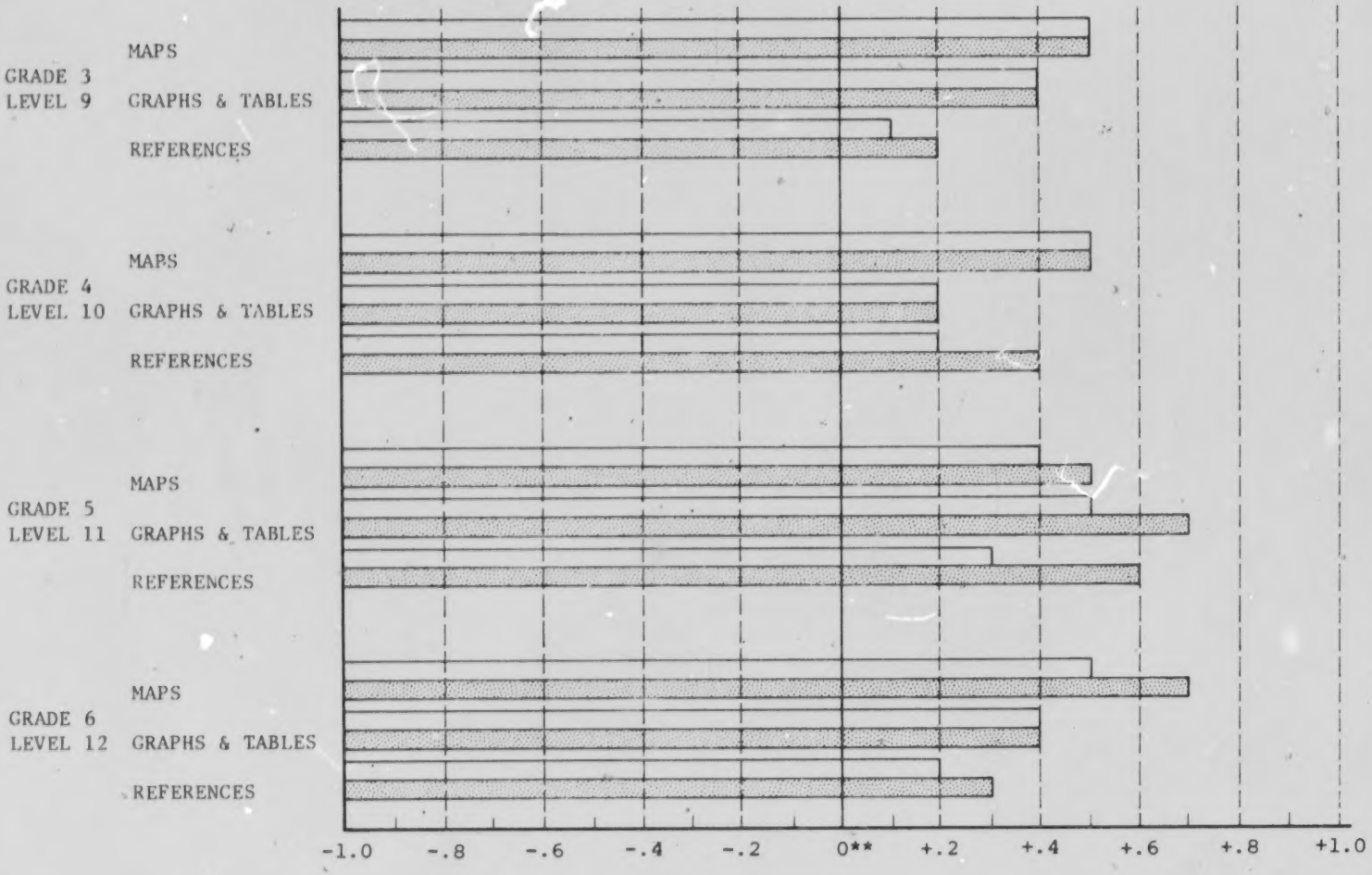
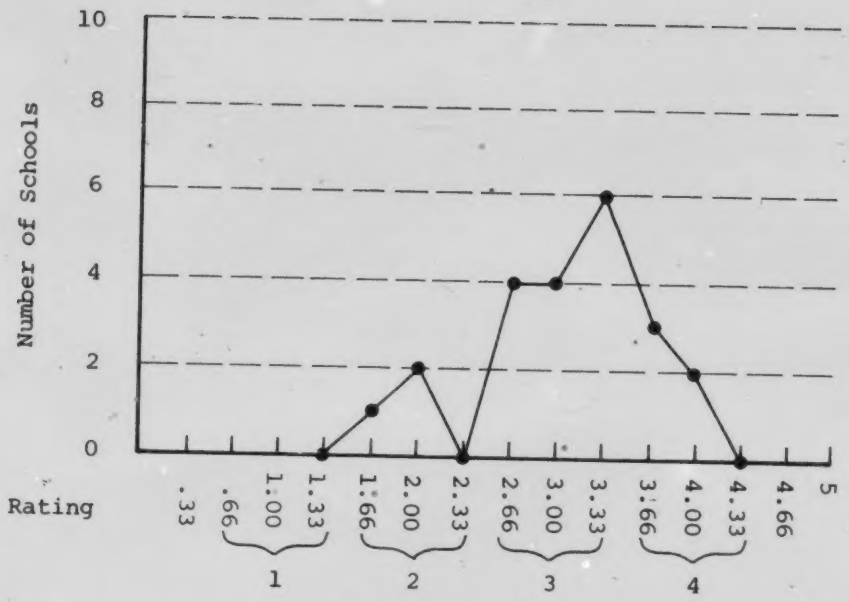


Figure 5. A comparison of baseline versus follow-up grade equivalent* means on Iowa Tests of Basic Skills, Form 6, Levels 9, 10, 11, and 12, Tests W1 (Map Reading), W2 (Reading Graphs and Tables), and W3 (Knowledge and Use of Reference Materials), at Grades 3-6 in schools with typically high reading achievement.

*national norms

**"0" represents the expected grade equivalent for the time of testing. For the maps and the graphs and tables subareas the expected grade equivalent was the actual grade involved plus .2. For reference skills the expected grade equivalent was the actual grade involved plus .8.



Ratings:

1 = little or no attempt to meet requisite

2 = less than adequate attempt to meet requisite

3 = adequate but less than expected attempt to meet requisite

4 = expected level of meeting requisite

5 = more than expected effort to meet requisite

Figure 6. Distribution of ratings for the twenty-two field test schools over all requisites for implementation combined.

TABLE 12

MEAN RATING ON EACH OF THE REQUISITES OF IMPLEMENTATION ACROSS ALL FIELD TEST SCHOOLS

Requisites	Weight	Rating
1. Attendance of at least one local leader at developer-sponsored training conference	(0)*	4.0
2. Total staff involvement	(3)	3.0
3. Directed inservice and work sessions	(2)	2.9
4. A variety of materials keyed to the behavioral objectives	(2)	2.9
5. Availability of Design materials	(1)	4.0
6. Initial booklet testing in at least Grades 2 to 6	(1)	3.7
7. Retesting within four weeks at a higher or lower level	(1)	3.8
8. Testing of newly enrolled students within one month	(1)	3.8
9. At least two hours per week for skill instruction	(4)	2.3
10. Ad hoc skill grouping for periods of up to three weeks	(2)	2.9
11. Assessment upon completion of instruction	(2)	2.8
12. Record-keeping on a regular and current basis	(2)	2.7
13. Monitoring of each child's skill development by a designated teacher	(2)	2.8
Added objective: Integration of Study Skills into content areas	(1)	2.5
OVERALL**		3.0

*null weight because this was an enforced requirement for the field test

**weighted mean

Figure 6 shows the distribution of ratings for each field test school on the combined requisites of implementation. Table 12 shows the mean rating achieved for each of the requisites over all schools combined. As the data in the figure and table indicate, the overall implementation was 3.0, which was adequate but less than expected. Five schools met the expected level (3.6-4.0) and three schools were less than adequate (1.6-2.5). Over all schools only four of the weighted requisites were met as expected (3.7-4.0) and they were not deemed as relatively important to the implementation of the program (weight = 1). The most important requisite (providing skill instruction during the implementation; weight = 4) received the lowest mean rating (2.3).

The particular importance of the implementation data lies in its relationship to the effectiveness of the program. The three highest rated schools and the three lowest rated schools were studied to document this relationship. One of the latter schools had typically lower reading achievement. The results from this school were adjusted to be comparable to the other five schools via the following procedure:

$$\frac{\text{low achievement mean}}{\text{high achievement mean}} = \frac{\text{specific low achievement result}}{\text{hypothetical high achievement counterpart}}$$

Table 13 details the results on the Design tests by subarea and by school.

The evidence from the program-embedded tests did not support the existence of a relationship between implementation and program effectiveness. Design test results showed insubstantial differences in improvement between the two groups. The three highest rated schools had a mean difference of 2.3 percent between the baseline scores and the follow-up scores. The three lowest rated schools had a mean difference of 2.4 percent. This compares to the overall mean difference of 2.5 percent for the schools with typically high reading achievement. Mean baseline scores for the highest rated and the lowest rated schools were within two percentage points of each other. Thus there was almost equal room for improvement for all of the schools.

Standardized test results, however, showed positive differences favoring the highest rated schools (see Table 14). The three highest rated schools attained a mean grade equivalent difference of .3 while the mean for the three lowest rated schools was .0. This compares to the overall mean difference of .1 grade equivalent points.

OBJECTIVE 3: PROGRAM FEASIBILITY

Acceptability

The program was generally well accepted by the staff in 14 of the 22 schools, although in every case some reservations were expressed. Widely varying attitudes or ambivalence were reported in seven of the schools, and a desire to discontinue use of the program was expressed by one school. Teachers with positive attitudes toward Study Skills

TABLE 13

COMPARISON SHOWING MEAN PERCENTAGE DIFFERENCES
BETWEEN BASELINE AND FOLLOW-UP RESULTS ON DESIGN TESTS
FOR HIGHEST RATED VERSUS LOWEST RATED SCHOOLS

	Overall Baseline Scores	Maps	Graphs and Tables	Reference Skills	Overall Difference*
Highest Rated Schools					
School A	71.2	5.2	2.1	-1.2	1.4
School B	70.0	4.0	12.1	1.8	3.8
School C	80.4	.5	.7	2.3	1.4
3 Schools Combined**	73.9	3.2	5.0	1.0	2.3
Lowest Rated Schools					
School X	73.2	4.4	3.6	1.2	2.6
School Y	75.3	2.3	-5.3	2.7	1.4
School Z***	67.6	4.9	3.3	2.1	3.2
3 Schools Combined	72.0	3.9	.5	2.0	2.4

*weighted mean (unit is test)
**mean of means (unit is school)
***adjusted figures

TABLE 14

COMPARISON SHOWING MEAN GRADE EQUIVALENT DIFFERENCES
BETWEEN BASELINE AND FOLLOW-UP RESULTS ON STANDARDIZED TESTS
FOR HIGHEST RATED VERSUS LOWEST RATED SCHOOLS

Highest Rated Schools	Change	Lowest Rated Schools	Change
School A	.4	School X	-.1
School B	.4	School Y	.2
School C	.0	School Z*	.0
Combined	.3	Combined	.0

*adjusted results

all had similar comments. First, the students enjoyed it so there was pleasure in teaching it, and second, the framework identified critical skills and helped organize and evaluate instruction which in many cases was previously carried out on a casual basis, if at all. Almost every person interviewed, even where general staff attitude was not favorable, reported that students almost without exception enjoyed the Study Skills activities and the tests. In one inner-city school the students continually asked to take a test which they seemed to view as a game or puzzle. The instructional activities, whether developed by the Center or the school, were also liked by students because they involved visuals and manipulatives and allowed movement about the room.

Although the following problems did not exist in every school, the majority of them occurred to some degree in most schools as reported by staff members:

1. Inability to meet staff planning requirements, involving both initial inservice time and ongoing released time, to prepare for instruction and to supplement the instructional materials in the teacher's resource file.

2. Difficulty in scheduling adequate Study Skills instruction in the school day due to its low priority in the curriculum, either because of administration requirements or because of teachers' judgments favoring instruction in Word Attack and directly related reading skills.

3. Management difficulties, particularly in integrating Study Skills with content areas and in forming instructional groups.

4. Overabundant testing, both programmatic and evaluative.

5. An overwhelming number of skills and amount of related materials with which to become familiar.

Table 15 shows distributions of attitudes according to school organization and level of typical reading achievement. Teachers in schools with some sort of unit organization were generally more enthusiastic than those in the schools with self-contained classrooms. Also, teachers in the schools with typically high reading achievement showed stronger preferences for the program than those in the schools with typically low reading achievement.

It is interesting to note that the three conventionally organized schools with higher typical reading achievement which reported general satisfaction with the program had incorporated into their organization one central feature of the concept of IGE-multiunit schools. This was the designation of one person as leader and the regular scheduling of meetings for teachers within a grade level. These schools, although they were by and large traditionally set up, were modified to allow for regular grade level meetings, and particular responsibility for coordinating the Design was assigned to reading resource teachers.

Informal observation reinforced the idea that leadership and communication among teachers were probably essential for overcoming the various Study Skills implementation problems and in maintaining high morale among teachers. Conversely the lack of a leader for planning

TABLE 15

DISTRIBUTIONS OF ATTITUDES ACCORDING TO GENERAL SCHOOL CHARACTERISTICS

		Generally Satisfied	Ambivalent	Generally Dissatisfied
Schools with Higher Typical Reading Achievement N = 17	unitized N = 13	9	3	1
	conventional N = 4	3	1	
Schools with Lower Typical Reading Achievement N = 5	unitized N = 1	1		
	conventional N = 4	1	3	
Total N = 22		14	7	1

at each grade level and the consequent burden on the individual teacher seemed to engender frustration, dislike, and rejection of the program. This becomes especially evident when implementation is examined on a grade-by-grade or unit-by-unit basis. Where a leader who was involved in both teaching and planning with teachers was identified or had emerged, the Study Skills program was better accepted and used.

Three other factors were observed in schools with generally favorable attitudes toward the program. First, these schools had often received some type of outside assistance with the program. For example, in Eau Claire student teachers from the UW-Eau Claire had prepared extensive social studies and mathematics units which meaningfully incorporated Study Skills at several levels. Also, the college held an all-day Study Skills workshop where implementation ideas were shared. The Eau Claire school system gave the school librarians released time and complete responsibility for preparing basic reference resources as well as expecting that they would assist and even coordinate all school planning and instruction in reference skills. Another example of outside help for at least two schools was the involvement of public librarians in teaching reference skills.

Another factor which seemed to enhance positive attitudes among teachers was flexibility within the curriculum. In schools where the required texts or units of study could be eliminated or altered, the staff could more readily develop content in conjunction with Study Skills. Or when the curriculum could be scheduled in a two- to three-year cycle such that, for example, all students at any one time in Grades 4-6 might work on the same topic in a "4th grade textbook," the staff could devote more attention to Study Skills and a single substantive area. The other factor which seemed to encourage a positive

attitude was time and recompense for preparing instructional activities. In one Colorado school six teachers each spent 20-40 hours in August preparing independent game-like activities. Credit workshops for Study Skills materials preparation also received a good response from teachers.

Attitudes expressed by principals were generally consistent with those of their teachers. Involvement of the principals in actual implementation varied greatly from school to school. At two multiunit schools the principals were extensively involved in keying of curricular materials to the skills and were somewhat involved in actual instruction of Study Skills. The principals in the self-contained schools generally had less direct involvement with the program.

Consultants in central offices for three districts which were extensively involved in the implementation of Study Skills gave positive reports on the status of Study Skills in their schools. The Milwaukee consultant considered implementation in the Milwaukee schools to be on the whole successful, aside from difficulties involved in introducing the program. The Eau Claire elementary supervisor expressed much enthusiasm about the program and coordinated the schools' efforts in training teachers and in keying materials. The Jefferson County, Colorado, reading consultants cited favorable standardized test results, teacher commitment to Study Skills, improved instruction through individualization, and the program's effectiveness with poor readers as factors giving rise to a generally positive attitude toward Study Skills in their district.

Scheduling

On the subject of scheduling, the majority of teachers in the conventionally organized schools taught Study Skills in the homeroom with the expectation that application would take place informally in the subject area classes. The exceptions occurred at the upper grade levels where some form of departmentalization existed. There Study Skills was taught by the social studies, science, and/or language arts teachers. These groups of children remained stable so that most children in a class were exposed to the same skill at the same time.

Scheduling for Study Skills appeared to be more easily accomplished and more flexible in the unitized schools. This was indicated in part by the fact that most unitized schools were able to begin implementation sooner and more systematically than most self-contained schools. Cross-age grouping within a unit, and regrouping of children according to skill needs, were common phenomena in these schools. Instruction in Study Skills was often integrated into the social studies, language arts, and science curricular units. In some schools time taken from one or more of these subject areas was used to instruct Study Skills in a skill by skill approach similar to that used for Word Attack. In other schools the subject matter was dominant and needed skills were taught as they pertained to the subject matter, so that instruction in Study Skills took place concurrently with instruction in the subject area.

Often library time was used for instruction of reference skills, and in at least five schools librarians took the roles of resource persons, teachers, and even coordinators of the reference skills program.

Cost

Program implementation costs fell into two categories: Design materials including NCS scoring services and non-Design supplementary materials. In the districts for which there are accurate data, actual break-in costs including machine scoring for the first year of implementation of the maps subarea and the graphs and tables subarea were $1.60 per child. In the second year of the field test, there was no opportunity to analyze the break-in costs for the reference skills subarea or continuing costs for the maps subarea and the graphs and tables subarea because the Center changed its mode of sharing responsibility for costs. That year schools were responsible for all costs of materials and the Center paid machine scoring expenses only. Anticipated costs based on the price list were $.92 per student for break-in for the reference skills subarea. No estimate was made for continuing costs for the maps subarea and the graphs and tables subarea.

Projected break-in costs for schools beginning with the complete field test version of the Study Skills program including machine scoring were $2.00 per pupil. Since this situation did not occur in the large-scale field test, actual data are unavailable to support or qualify the projections.

Break-in costs for the revised commercial edition are estimated to be $1.64 per pupil with machine scoring and $1.19 without it, given that there are 100 students per level at all levels and that retesting does not occur more than 5 percent of the time. The cost for continuing the program in later years should be between $.15 and $.35 per pupil. This is the amount required to replace the consumable materials. A detailed cost comparison based on price lists is located in Appendix N.

As far as the non-Design materials are concerned, the amounts of money spent by schools varied considerably. Two schools reported spending nothing on supplementary instructional materials; at the other extreme, one school estimated having spent between $2,500 and $3,000. Most schools spent between $100 and $400. Generally the types of materials invested in were maps and globes, audiovisual equipment and filmstrips, SRA and Nystrom kits, dictionaries, and children's newspapers and periodicals. Many of these materials were nonconsumable and could be used in future years. There appears to be little relationship between the amount of money spent on non-Design materials in the initial year of implementation and results on the Design and standardized tests, although it is interesting to note that the two extremes--the two schools that reported spending nothing and the school that spent thousands on supplemental materials--showed on the whole less improvement than other schools.

Although aides were used to assist implementation in many schools, either by doing record-keeping and testing or, as the field test progressed, by assisting with instruction of individuals, there was no indication that extra aides were hired in order to implement Study Skills. Some schools, usually self-contained, were able to implement Study Skills without assistance from aides.

Kindergarten Applicability

Indications from the pilot test that there were problems at Level A were confirmed by the Type I field test. Fewer than half of the schools implemented Study Skills at the kindergarten level. In a few cases

implementation did not occur at the Grade 1 level either. Teachers and principals maintained that the curriculum at the primary levels was too crowded to admit regular implementation of Study Skills and that they preferred to concentrate on Word Attack. Most of the teachers who taught Level A thought that the skills were too easy for most children. They did like, however, the fact that the identification of these skills gave them an awareness of behaviors whose importance to a child's intellectual development is often overlooked. They liked the activities suggested in the teacher's resource file and felt it was helpful to have a framework for assessing the few doubtful cases.

Other implementation problems were associated with a substantive gap between the Level A and the Level B skills. In an attempt to bridge the gap during the course of the field test, the developers split the Level B skills into nonreader and reader skills. The problem was somewhat alleviated. But still most children could not handle the nonreader Level B tests once they showed mastery of the Level A skills. Since there was almost 100 percent mastery of all Level A skills by kindergarten children, the Level A tests proved useless for placing first grade students in the program. When the students did successfully move on and complete the nonreader Level B skills, they reached a stalemate at the reader Level B skills, especially in posttesting. Teachers complained that even when the child could successfully work on activities for the skill, the teacher then had to read almost every word of the test to the child. The number of specific criticisms of test format at the B level indicated that to a large degree the problem was associated not so much with the content as with the presentation of the test items.

OBJECTIVE 4: REVISIONS RECOMMENDATIONS

Many of the same data which were used for the summative purpose of gauging the effectiveness of the program were also used for the formative purpose of determining what improvements needed to be made. First, teacher data on the usability of the materials, the ease of scheduling, and other aspects of implementation were compiled for review by the developers. See Appendix M for teacher comments. Second, all data on the program-embedded tests were used to determine the need for revisions in the instruments as well as in the related objectives. See Appendix N for a summary of test results.

Teacher data from the Type I field test confirmed that the Study Skills program had the following strong points: it filled an important gap in the elementary curriculum by identifying essential skills which previously were picked up on the side if at all; it provided a management system for organizing instruction and evaluating performance on those skills; in addition, it involved a variety of media and instructional approaches which motivated students to learn and to enjoy study skills.

The following were some of the problems in Study Skills which were illuminated by teacher and test data. The number of individual skills was overwhelming. Some of the skills were so finely distinguished that instruction in one would bring about mastery of others. The time required to teach different skills varied from mere exposure to a matter of weeks. Some of the skills were inappropriately leveled. There was an overabundance of time-consuming individual assessments. There were too few individual activities. The concept of integration of Study Skills with the content areas was a new and complex addition to the system of implementation of the Design. In addition there were the usual editing and formatting problems which are expected in any field test of a product under development.

The evaluation did not indicate a need for any change in the general management system of the Design. Nor did it suggest any need for extensive redevelopment or creation of new materials. The revisions which took place involved primarily editing, reorganizing, and streamlining of the program. The number of skills was reduced from 132 to 71 (see Table 16), approximately the same number of skills per level as in Word Attack. There were now proportionally fewer skills at the lower levels (see Table 17) where Study Skills was implemented concurrently with Word Attack. All but seven of the original 47 individually assessed skills were removed from the Study Skills area, and performance tests were devised for the remaining ones. Many of the skills were combined or releveled according to the guidelines derived from the test data. As far as the materials are concerned, revisions were made along the following lines. The teacher's resource file was expanded to include more varieties of learning experiences. One skill card which could follow a child through the entire course of his elementary experience was developed, replacing the two in the developmental version. The revised version contained one test administrator's manual and test booklet per level instead of the original two, so that the test administration would be less complex. Alternative possibilities for implementation which were developed by field test schools were described in the teacher's planning guide.

For more detail on the revisions which took place subsequent to the field test see Working Paper No. 128 (Sals, 1975).

TABLE 16

DISTRIBUTION OF SKILLS IN STUDY SKILLS
BY SUBAREA BEFORE AND AFTER REVISIONS

	Developmental	Revised
Maps	33	25
Graphs and Tables	19	17
Reference Skills	80	29
TOTAL	132	71

TABLE 17

DISTRIBUTION OF SKILLS IN STUDY SKILLS
BY LEVEL BEFORE AND AFTER REVISIONS

	Level	Developmental	Revised
CONCURRENT WORD ATTACK IMPLEMENTATION	A	9	3
	B	16	4
	C	19	11
	D	25	14
	E	26	17
	F	20	12
	G	17	10

V

SUMMARY

A field test of the precommercial version of the Study Skills element of the Wisconsin Design for Reading Skill Development was conducted in 22 schools from 1971 to 1973. Seventeen of the schools were situated in rural to suburban locations and had prior reading achievement at or above national norms. Five were located in an inner-city area and had prior reading achievement below national norms. Half of the schools had a multiunit organization and half were organized on a self-contained basis.

The objectives of the field test were as follows: (1) to determine whether students who participated in Study Skills showed greater achievement than students who did not, as indicated by program-embedded criterion-referenced measures and by norm-referenced standardized tests; (2) to document the degree to which recommended implementation procedures were followed; (3) to determine the feasibility of the program from the points of view of acceptability, ease of scheduling, cost, and kindergarten applicability; and (4) to gather feedback on all components of the program in order to recommend program revisions.

Data-gathering procedures involved the administration of the Wisconsin Tests of Reading Skill Development: Study Skills and the Iowa Tests of Basic Skills or the Comprehensive Tests of Basic Skills immediately before implementation of Study Skills (baseline) and one year later (follow-up) for assessment of objectives 1 and 4. Prior median reading performance was a factor in grade placement for these instruments. Data relative to objectives 2, 3, and 4 were gathered via interview schedules, questionnaires, informal conversations, and comment cards. Monitoring interviews were conducted twice yearly and each school was visited approximately three times throughout the field test.

The results of assessment related to objective 1 indicated a consistently positive trend in favor of the Study Skills students on program-embedded and standardized measures. In all analyses schools with lower typical reading achievement showed greater improvement than schools with higher typical reading achievement. The achievement results are summarized in Table 18.

Regarding objective 2, overall implementation was adequate but less than expected. The most important procedure, providing sufficient skill instruction, received a less than adequate mean rating. An analysis relating implementation to student achievement did not support the hypothesis that more thorough implementation yields greater achievement. Investigations related to objective 3 found Study Skills to be generally well accepted, with some reservations in all cases. Schools with team organization showed the most positive outlook toward the program. The program was relatively inexpensive with initial overall costs of less than $2.00 per pupil and nominal continuation

TABLE 18

SUMMARY OF COMPARISONS ON ACHIEVEMENT OF
STUDY SKILLS VERSUS NON-STUDY SKILLS STUDENTS

		Program-Embedded Tests			Standardized Tests
	N*	Percent of objectives for which program students exceed non-program students	Mean differences in percent of total test items between baseline and follow-up scores	Mean differences in percent of students mastering objectives between baseline and follow-up scores	Mean differences in grade equivalents between baseline and follow-up scores
Schools with lower typical reading achievement	5	95	6.7	10.3	.6
Schools with higher typical reading achievement	17	76	2.5	5.1	.1

*Number of schools

costs. Formative data gathered for objective 4 indicated that the number of skills was overwhelming, that some skills overlapped each other and others were inappropriately leveled, and also that there were too many time-consuming assessments through observation or performance. As a result the program was reorganized and streamlined. The number of skills was reduced from 132 to 71 and the number of assessments through observation or performance was reduced to seven. Additional changes were made in format and materials in response to comments on the program's usability.

The field test demonstrated that even with the many imperfections of the precommercial version the Study Skills program was a viable and effective addition to the elementary school curriculum. Study Skills demanded more coordination than many programs, which could result in its being given low priority when competing with other programs for school time. Yet teachers on the whole supported it because the framework, by identifying essential skills, helped organize and evaluate instruction which in many cases was carried out previously on a casual basis, if at all. The teachers supported the program and enjoyed teaching it even more when they saw how much the students enjoyed it.

REFERENCES

Hubbard, W. D. Evaluation--Wisconsin Design for Reading Skill Development: Study Skills, Type II field test: 9/71-5/73. Project Paper. Madison: Wisconsin Research and Development Center for Cognitive Learning, 1975.

Klausmeier, H. J., Quilling, M. R., Sorenson, J. S., Way, R. S., & Glasrud, G. R. Individually Guided Education and the multiunit elementary school: Guidelines for implementation. Madison: Wisconsin Research and Development Center for Cognitive Learning, 1971.

Otto, W., & Askov, E. Rationale and guidelines. Minneapolis: National Computer Systems, 1974.

Quilling, M. R., & Wojtal, P. The Wisconsin Design for Reading Skill Development: Study Skills. A report on the pilot test: 1970-72. Working Paper No. 97. Madison: Wisconsin Research and Development Center for Cognitive Learning, 1972.

Sals, D. K. A description of the revisions for the commercial edition of the Wisconsin Design for Reading Skill Development: Study Skills. Working Paper No. 128. Madison: Wisconsin Research and Development Center for Cognitive Learning, 1975.

APPENDIX A

Statement of Skills and Objectives for the Field Test Version of Study Skills

NOTE: Skill number is given after the skill description. For example, Level A, Skill 5 is found in the outline at A.3.b. An i following the skill number indicates that assessment must be individually administered.

Level A

1. Locates objects in relation to self [1i]

Objective:
The child is able to describe or respond to descriptions of the positions of objects in his environment in relation to himself by using the following terms: up-down, on, between, near (beside), behind-in front of (front-back), below-above (over-under).

2. Has measurement skills

a. Describes relative size [2i]

Objective:
The child is able to use descriptive terms (e.g., bigger-smaller, taller-shorter, lower-higher) to express comparisons of size of objects in his environment.

b. Determines relative distance [3i]

Objective:
The child is able to use descriptive terms (e.g., closer-farther, long way-short way) to express comparisons of distance in his environment.

3. Has beginning work study skills

a. Follows simple directions [4i]

Objective:
The child is able to perform the actions in simple one- and two-stage directions, e.g., "Mark an X in the middle of your paper," "Please come and take one of these boxes of paper shapes to your work area."

b. Is able to remember details [5i]

Objective:
The child is able to remember sufficient details (a) from an oral presentation–i.e., story, show-and-tell–to respond to specific questions, e.g., four questions regarding specific facts based upon a 100-word presentation and/or (b) from an event he is describing to give an intelligible account of what happened.

c. Has attention and concentration span suitable for his ability [6i]

Objective:
The child is able to demonstrate active participation in classroom listening situations. (The child attends to an oral presentation and responds appropriately, i.e., follows directions, reacts with relevant questions, and/or contributions.)

NOTE: Assessment is best carried out over a span of time during which the child can be observed in a variety of situations and his behavior compared to that of his age/grade group.

d. Has beginning of independent work habits [7i]

Objective:
The child shows independence in his assigned work by (a) asking questions that are necessary for clarification of the task, (b) not asking attention-seeking questions once the task is clear, (c) keeping the necessary tools–i.e., pencil, paper, crayons, scissors, etc.–at hand, (d) accepting responsibility for completion and quality of work, and (e) pacing himself to complete a task acceptably in the allotted time (5-10 minutes).

NOTE: The preceding objective must be assessed by observing the child over a period of time. Special note should be made of the child who does neat work but only at the expense of extended, painstaking effort.

4. Has basic book handling skills [8i]

Objective:
The child demonstrates basic book skills by (a) selecting books appropriate to his interests and ability level, (b) handling books reasonably (i.e., right-side-up, from front to back), and (c) referring to books by their main character or subject (e.g., "The book about the butterflies).

5. Is familiar with procedures within the library [9i]
(book table, book corner, learning center, instructional materials center, or media center)*

Objective:
The child (a) locates groups of books appropriate to his needs, and (b) is able to check books in and out.

*NOTE: We have selected "LIBRARY"–as a descriptive term for whatever facilities are available to the child for finding either books or audiovisual learning aids.

Level B

1. Identifies representational relationships [1]

Objective:
The child is able to place three-dimensional representations of objects to reflect their actual locations in the environment, e.g., place blocks that represent houses on a large floor map, build models in a sand box.

2. Has location skills

a. Locates objects in relation to other objects [2]

Objective:
The child is able to describe or respond to descriptions of the positions of objects and representations of objects in relation to other objects and representations in the following terms: right-left, up-down, on, between, near (beside), behind-in front of (back-front), below-above (over-under).

b. Locates points in relation to a simple picture grid [3]

Objective:
Given axis and coordinate referents the child is able to locate points and describe the location of points in relation to a simple picture grid.

3. Has measurement skills

a. Describes relative size [4]

Objective:
The child is able to use descriptive terms (e.g., bigger-smaller, taller-shorter, lower-higher) to express comparisons of size of representations of objects (e.g., scale models, pictures).

b. Determines relative distance [5]

Objective:
The child is able to use descriptive terms (e.g., closer-farther, long way-short way) to express comparisons of distance in representations of objects (e.g., sand box, pictures).

4. Interprets picture graphs [6]

Objective:
Given a simple vertical picture graph in which each symbol represents a single object and there are no more than three to five columns of pictures, the child is able to

a. determine the purpose *(surmise the objective of the presentation by considering all parts of the graph [title, dimensions, nature of content], e.g., the child determines that a graph shows the number of trucks that each of three children have)*

b. compare relative amounts *(use descriptive terms [i.e., most, fewest or least, more, fewer or less, largest, smallest], not exact numbers to express comparisons of amounts on graphs)*

c. extract directly *(sum, by counting, the units in a particular column)*

5. Interprets single-column tables [7]

Objective:
Given a single-column table with from three to five rows the child is able to

a. determine the purpose *(surmise the objective of the presentation by considering all parts of the table [title, dimensions, nature of content], e.g., the child determines that a table shows the number of trucks that each of three children have)*

b. locate a cell *(find the point of intersection of a specified row and a specified column and derive information from it)*

c. compare relative amounts *(use descriptive terms [e.g., most, fewest or least, more, fewer or less, largest, smallest] to compare the quantities designated by two or more cell entries)*

6. Refines beginning work study skills

a. Follows oral directions given to a group [8]

Objective:
The child is able to follow two-stage oral directions when the directions are administered to a group—i.e., 10 or more pupils—of which the child is a part.

b. Follows oral directions given individually [9]

Objective:
The child is able to perform the actions in two-stage directions that require some judgment when the directions are given directly to him.

NOTE: The two preceding objectives can best be assessed by observing the child's performance over a period of time, for contrived situations are likely not only to have an aura of contrivance but also to be of too short duration to be very meaningful. Special note should be made of the child who responds adequately with individual attention but not in a group, or, conversely, who can take cues from the group and proceed satisfactorily but breaks down when left to himself.

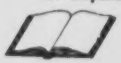
c. Follows written directions [10]

Objective:
The child is able to follow a series of three to four brief written directions.

7. Begins location skills (letters and digits) [11]

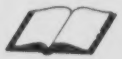
Objective:
The child is able (a) to indicate the correct symbol when letters and digits are presented orally, and (b) to match capital and other allographs of one letter.

8. Expands book skills [12i]



Objective:
The child demonstrates expanded book skills by (a) continuing to select appropriate books, and (b) beginning to identify books by their titles, and (c) using the Table of Contents page in textbooks.

9. Expands use of the library [13i]



Objective:
The child demonstrates expanded use of the library by (a) using more materials, such as picture dictionaries, (b) asking for help in finding books about a specific subject, (c) continuing to observe local rules, and (d) attempting to apply other skills, i.e., the child may try to locate a book in the card catalog by title; see objective B.8.b.

10. Uses a picture dictionary for spelling new words [14i]

Objective:
The child is sufficiently familiar with a picture dictionary to check the spelling of words he uses in writing.

11. Begins to organize materials for his own use

a. Arranges pictures and words in sequence [15]

Objective:
The child can re-create the sequence of a story or event by arranging pictures or by arranging key words in order (e.g., The Three Bears: "hot bears walk - Goldilocks - breakfast - chairs - beds - bears come home").

b. Classifies ideas [16]

Objective:
Given five ideas or facts, the child is able to determine which are relevant to a given topic.

Level C

1. Has representation skills

NOTE: The concept that underlies these subskills is of prime importance: symbols are arbitrary. The sequence here goes from pictorial to semipictorial to nonpictorial. Thus, the development moves from realistic representations of concrete objects to abstract representations of objects.

a. Uses picture symbols to interpret maps [1]

Objective:
The child is able to use realistic pictures (e.g.,) to derive information from maps.

b. Uses semipictorial symbols to interpret maps [2]

Objective:
The child is able to use semipictorial symbols (e.g.,) which are explained in a key (legend) to derive information from maps.

c. Uses color key to interpret maps [3]

Objective:
The child is able to use distinct colors (e.g., brown, red, yellow and blue) which are explained in a key to derive qualitative information from different maps, e.g., blue may denote water, grocery stores or parks on different maps.

2. Has location skills

a. Locates points in relation to a simple grid [4]

Objective:
The child is able to locate points and describe the location of points in relation to a simple street grid.

b. Indicates cardinal directions on a globe [5i]

Objective:
The child is able to indicate on a globe (a) north and south with reference to the North Pole, South Pole, and equator, and (b) east and west with reference to north-south.

3. Has measurement skills

a. Interprets relative size [6]

Objective:
The child is able to interpret the relative size of areas in semipictorial maps, e.g., lakes, parks, forests.

b. Expresses relative distance [7]

Objective:
The child is able to use familiar nonstandard units of measurement (e.g., blocks, houses) to express distance and comparisons of distance on semipictorial maps.

4. Has graph skills

a. Picture graphs [8]

Objective:
Given a horizontal picture graph in which each symbol represents more than one unit (i.e., 2 to 10), the child is able to

1) determine the purpose *(see B.4.a)*

2) compare relative amounts *(see B.4.b)*

3) extract directly *(note the number of units represented by the whole symbol, and then arrive at the total number of units in a particular row)*

4) determine differences between numbers extracted *(compare, by addition and/or subtraction, the exact amounts represented in given rows)*

b. Bar graphs [9]

Objective:
Given a vertical bar graph which has one group of bars and a small interval on the coordinate (i.e., 2 to 10), the child is able to

1) determine the purpose *(see B.4.a)*

2) compare relative amounts *(see B.4.b)*

3) extract directly *(note the line to which a particular bar comes and read the number beside the line)*

5. Interprets multicolumn tables [10]

Objective:
Given a simple, multicolumn table with from two to four rows and columns the child is able to

a. determine the purpose *(see B.5.a)*

b. locate a cell *(see B.5.b)*

c. compare relative amounts in a single dimension *(use descriptive terms [e.g., most, fewest or least, more, fewer or less, largest, smallest] to compare the quantities designated by two or more cell entries in a given row or column)*

d. determine relationships among cells *(report the difference among two or more specified cells)*

6. Shows increasing independence in work [11i]

Objective:
The child shows independence and acceptance of responsibility by

(a) asking the questions required to clarify a task, (b) keeping the materials required to complete a task available and organized, (c) showing an awareness of a standard for general quality in assigned work, and (d) pacing himself to complete assigned tasks in the time allotted (30 minutes).

7. Groups and orders words by initial letter [12]

Objective:
The child is able to (a) group words by their initial letter, (b) order words by their initial letter, and (c) choose appropriate encyclopedia volumes by letter (e.g., look in the E volume for information about elephants).

8. Expands book skills [13]

Objective:
The child demonstrates expanded book skills by (a) identifying books by their titles, (b) finding the title page in a book, (c) associating authors with books, (d) finding the author's name on the title page, (e) locating the table of contents in a book, and (f) locating index in a book.

9. Expands use of library [14i]

Objective:
The child is able (a) to find easy books for independent reading, (b) to locate fiction books by author's last name, (c) to locate nonfiction books, encyclopedias and dictionaries, and (d) to ask for assistance in using card catalog to apply skills C.8.a and d.

10. Begins to use reference materials [15i]

Objective:
The child is able to (a) select pictures appropriate to a given topic from a picture file, (b) differentiate in his use of encyclopedias and dictionaries, (c) use encyclopedias for browsing, and (d) use some nonfiction materials as authoritative sources.

11. Reads to find answers: Takes notes [16]

Objective:
The child is able to read to find answers to direct questions, take simple notes to answer the questions, and use the notes to answer the questions at a later time (2-3 days).

12. Organizes and evaluates materials

a. Keeps simple reading record [17i]

Objective:
The child lists the titles of books consulted with reference to a given topic.

b. Recognizes organization of ideas in sequential order [18]

Objective:
The child is able to recognize sequential relationships among two or three ideas.

c. Begins to make judgments and draw conclusions [19]

Objective:
Given facts, the child is able to respond correctly to questions requiring that he make judgments and draw conclusions on the basis of the facts presented.

Level D

1. Has representation skills

a. Uses a key containing nonpictorial symbols to interpret maps [1]

Objective:
The child is able to use a key containing nonpictorial symbols (e.g., lines, dots) to derive information from maps.

b. Uses a color key to interpret maps [2]

Objective:
The child is able to use a color key, in which colors identify classes and no more than three shades of any color identify subclasses, to derive information from maps, e.g., the child reports that there are two areas of marshland (light blue) and one area of swamp (dark blue).

2. Has location skills

a. Locates points on a number-letter grid [3]

Objective:
The child is able to locate points and describe the location of points on a number-letter grid.

b. Determines cardinal directions on globes, in his environment, and on maps [4]

Objective:
The child is able to (a) determine cardinal directions to describe relative location of two points on globes, in his environment, and on maps, and (b) relate the location of points on globes and maps to the location of points in the environment, e.g., the child matches objects pictured on a map with objects in his environment to determine direction.

3. Uses scale to determine whole units of distance [5]

Objective:
The child is able to use a scale bar referent or verbal referent (i.e., 1 inch = X standard units of measure) to compare and determine distances between points (a) one or more referent units apart when one referent unit equals one standard unit of measure (e.g., 1 inch = 1 mile, $\frac{0 \quad 1}{\text{miles}}$), and (b) one referent unit apart when one referent unit equals more than one standard unit of measure (e.g., 1 inch = 20 miles).

4. Has graph skills

a. Picture graphs [6]

Objective:
Given a picture graph in which each symbol represents more than one unit (e.g., 2, 10, 20), the child is able to

1) determine the purpose *(see B.4.a)*

2) compare relative amounts *(see B.4.b)*

3) extract directly *(see C.4.a.3)*

4) determine differences between numbers extracted *(see C.4.a.4)*

5) make a summary statement

(summarize all of the data presented, e.g., from a graph showing the numbers of ships built in various countries, the child concludes that one country is the major source of production)

b. Bar graphs [7]

Objective:
Given a horizontal or vertical bar graph which has one group of bars and a small interval (e.g., 2, 10, 20), the child is able to

1) determine the purpose *(see B.4.a)*

2) compare relative amounts *(see B.4.b)*

3) extract directly *(see C.4.b.3)*

4) determine differences between numbers extracted *(compare, by addition and/or subtraction, the exact amounts represented by given horizontal or vertical bars)*

5) make a summary statement *(see D.4.a.5)*

c. Circle graphs [8]

Objective:
Given a circle graph with from two to four divisions the child is able to

1) determine the purpose *(see B.4.a)*

2) compare relative amounts *(see B.4.b)*

5. Interprets multicolumn tables [9]

Objective:
Given a multicolumn table with from five to eight rows and columns, familiar units for denominate numbers (explained in a key), and/or totals included for each column and row, the child is able to

a. determine the purpose *(see B.5.a)*

b. locate a cell *(see B.5.b)*

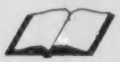
c. compare relative amounts in a single dimension *(see C.5.c)*

d. determine relationships among cells *(report the difference or multiplicative relationship among two or more specified cells)*

e. make a summary statement

(summarize all of the data presented, e.g., on a table showing the number of ships built in various countries during each of ten consecutive years, the child concludes that one country is the major source of production for one particular year, while another country is the major source of overall production)

6. Has independent classroom and research work habits



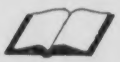
a. Follows oral or written directions independently [10i]

Objective:
The child is able to (a) remember and follow a series of directions in sequence, and (b) generalize from directions for one task to a similar task.

b. Begins to do research assignments independently [11i]

Objective:
The child shows independence or acceptance of responsibility by (a) working independently on assigned projects, and (b) pacing himself to complete long term tasks in the time allotted (1 week).

7. Expands locational skills



a. Applies basic alphabetizing skills [12]

Objective:
The child is able to (a) alphabetize words by first and second letters, and (b) locate target words in dictionaries and encyclopedias.

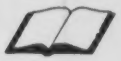
b. Uses guide words in encyclopedias and dictionaries [13]

Objective:
The child is able to locate the appropriate alphabetical section of a reference book for a given topic or target word by attending to the alphabetic sequence of guide words.

c. Uses SEE references in encyclopedias [14]

Objective:
The child locates the topic referred in response to a SEE reference (e.g., Having located "Plain Indians. See Indian, American," the child locates the topic referred).

8. Expands book skills



a. Uses table of contents [15]

Objective:
The child refers to the table of contents to (a) determine if a book is relevant to his specific purpose (e.g., interest, research topic), and/or (b) locate a particular chapter or section in a book.

b. Uses glossary [16i]

Objective:
The child locates and uses the glossary in a book, rather than a dictionary, to look up the meaning(s) of words as they are used in the

context of the book (i.e., he finds new meanings for familiar words and unfamiliar words as they are used in a given context or subject matter area).

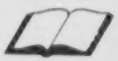
c. Begins to use indexes [17]

Objective:
Having identified a general topic, the child uses the indexes of books to locate information about the topic.

d. Uses study aids in textbooks [18i]

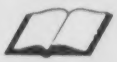
Objective:
The child finds and uses such study aids as boldface type, italics, and/or marginal notes in using textbooks.

9. Expands use of library [19i]



Objective:
The child (a) is able to locate magazines and some nonfiction books relevant to his interests and assigned work, and (b) continues to attempt higher level skills such as using card catalog with assistance of librarian.

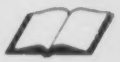
10. Begins to expand use of reference materials [20i]



Objective:
The child will independently seek additional reference sources (a) if the source first consulted does not give sufficient information, and/or (b) pursue interest aroused by initial stimulation (e.g., having found a picture of an igloo in the dictionary, the child consults the encyclopedia to learn about the construction of igloos).

NOTE: Encyclopedias are considered an important beginning reference material. Teachers should check that they are being used to check facts, and as a beginning source, and not as sources for complete reports, verbatim from encyclopedias.

11. Reads to locate information



a. Begins to adjust reading rate [21i]

Objective:
The child skims materials at a rapid rate when seeking to verify or locate specific information, i.e., a date, a name.

b. Uses headings and subheadings [22]

Objective:
Having located a topic in a reference book, the child utilizes the organization of the material to search efficiently for target information.

12. Organizes and evaluates materials

a. Recognizes printed statements may be fact or opinion [23i]

Objective:
The child is able to make a considered decision as to whether given statements represent fact or opinion.

b. Evaluates relevance of materials [24]

Objective:
Given an assigned list of topics, the child is able to choose from among available sources those that are likely to include relevant information on specific topics.

c. Checks accuracy of statements [25]

Objective:
The child is able to identify discrepancies between simple factual data from two sources, e.g., number of parks in a city.

NOTE: When children identify these discrepancies through classroom research, they then should be directed to discover *why* two sources provided different answers; e.g.—is it their error in note-taking; is one source out of date; are the graphs, tables, etc., consulted labeled differently?

Level E

1. Uses point and line symbols to interpret maps [1]

Objective:
The child is able to use point and line symbols (e.g., circles of different sizes, lines of different widths) to derive qualitative and quantitative information from maps; e.g., the child identifies the largest city on a map as the one represented by the largest circle.

2. Has location skills

a. Applies rectangular grid to earth's sphere [2]

Objective:
The child is able to use (a) lines of latitude as referents for describing general locations (e.g., north of equator) and (b) lines of longitude as referents for describing general locations (e.g., west of Prime Meridian).

b. Determines intermediate directions on globes, in the environment, and on maps [3]

Objective:
The child is able to (a) determine intermediate directions to describe relative location of two points on globes, in his environment, and on maps, and (b) relate the location of points on globes and maps to the location of points in the environment; e.g., the child matches objects pictured on a map with objects in his environment to determine direction.

3. Makes limited use of scale to determine distance [4]

Objective:
The child is able to use a scale bar referent or verbal referent (i.e., 1 inch = X standard units of measure) to compare and determine distances between points one or more referent units apart when one referent unit equals two or more standard units of measure; e.g., when 1 inch = 3 miles, the child concludes that 3 inches = 9 miles.

4. Has graph skills

a. Picture graphs [5]

Objective:
Given a picture graph in which (a) each symbol represents more than one unit (e.g., 2, 10, 20) and (b) half symbols are used, the child is able to

1) determine the purpose *(see B.4.a)*
2) compare relative amounts *(see B.4.b)*

3) extract directly *(see C.4.a.3)*
4) extract by interpolating *(determine appropriate numbers not expressed in whole symbols, e.g., the child determines the number depicted by a partial symbol)*
5) determine differences between numbers extracted *(see C.4.a.4)*
6) make a summary statement *(see D.4.a.5)*
7) make projections and relate information *(state probable outcomes or trends [e.g., having observed a trend shown on a graph, the child predicts future performance] and relate the information presented and the projections derived to his previous knowledge)*

b. Bar graphs [6]

Objective:
Given a horizontal or vertical bar graph which has one group of bars and a small interval (e.g., 10, 20) the child is able to

1) determine the purpose *(see B.4.a)*
2) compare relative amounts *(see B.4.b)*
3) extract directly *(note the line to which a particular bar comes, and then (a) read the number beside the line or (b) note the particular tick mark beside the bar and determine the correct amount, e.g., given an interval of 10, the child reports that a bar at the seventh tick mark between 10 and 20 represents 17 units)*
4) extract by interpolating *(determine the appropriate amount represented by a bar "between the lines")*
5) determine differences between numbers extracted *(see D.4.b.4)*
6) make a summary statement *(see D.4.a.5)*
7) make projections and relate information *(see E.4.a.7)*

5. Interprets multicolumn tables [7]

Objective:
Given a complex multicolumn table with denominate numbers (explained in a key or the title), and/or totals included for each column and row, the child is able to

a. determine the purpose *(see B.5.a)*
b. locate a cell *(see B.5.b)*
c. compare relative amounts in a single dimension *(see C.5.c)*
d. determine relationships among cells *(see D.5.d)*

e. make a summary statement

(see D.5.e)

f. make projections and relate information

(state probable outcomes or trends [e.g., having observed a trend shown on a table, the child predicts future performance] and relate the information presented and the projections derived to his previous knowledge)

6. Has independent classroom and research work habits [8i]

Objective:
The child is able to focus all previously mastered study skills in independent study and/or research.

NOTE: The child should demonstrate ability to direct his own independent inquiry; e.g., pursue special interests related to assigned tasks, initiate independent projects.

7. Expands locational skills

a. Utilizes alphabetical system [9]

Objective:
The child is able to alphabetize words.

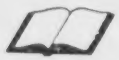
b. Uses guide words and guide letters [10]

Objective:
Given (a) the guide words and page numbers from three to six pages, in a reference book, the child is able to specify the page on which specific words could be found, and/or (b) the guide letters and drawer numbers of a card catalog, the child is able to specify the drawer in which specific words, names, or topics could be found.

c. Uses alphabet skills related to card catalog [11]

Objective:
For locating information in the card catalog, the child (a) uses guide cards in the drawers to locate his target word quickly, and (b) ignores initial articles.

8. Expands book skills



a. Refines use of indexes [12]

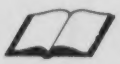
Objective:
Having identified, or given a general topic, the child uses the indexes of books or the index volume of an encyclopedia to locate specific information regarding subtopics; e.g., SPACE, Space travel: development of flight plan, history of.

b. Considers special features of books in selection [13i]

Objective:
The child examines books to judge their relevance to his purposes.

NOTE: The child considers such questions as: does the book include relevant pictures, maps, graphs, tools, etc.? Does a general text include information on a given topic?

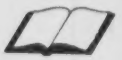
9. Extends familiarity with library [14]



Objective:
The child is able to (a) locate and identify author, subject, and title cards in the card catalog, and (b) use them to locate books and other materials.

NOTE: Included among other materials are such things as games, film strips, films, records, photographic equipment, etc., which may be found in a well stocked library. In the present context, emphasis is placed on books.

10. Expands use of reference materials



a. Uses dictionaries independently [15]

Objective:
The child uses dictionaries to check the spelling and/or meaning of words as needed.

b. Consults encyclopedias and atlases [16i]

Objective:
The child locates (a) information on one topical heading in more than one encyclopedia by adapting his locational skills to the idiosyncrasies of each set (e.g., some have individual volume indexes, some have no indexes, some have a multivolume index), and (b) maps in atlases.

c. Uses pamphlet files [17i]

Objective:
The child routinely includes the pamphlet file in a check for material available on a subject.

d. Uses magazines and newspapers [18i]

Objective:
The child selects magazines and newspapers as sources of current topical information.

e. Uses selected specialized reference books [19]

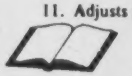
Objective:
The child selects (a) *World Almanac* and/or *Information Please Almanac*, or (b) *Junior Book of Authors*, or (c) a dictionary, or (d) an encyclopedia, or (e) an atlas, or (f) a nonfiction book, whichever is most appropriate to answer specific questions.

NOTE: The child should select the *World Almanac* to find demographic information, dates; a dictionary for word meaning; an encyclopedia for general background; *Junior Book of Authors* for biographical information about a children's author, etc.

f. Uses nonfiction materials as references [20i]

Objective:
The child chooses nonfiction books and materials not formally designated "Reference" when appropriate.

11. Adjusts reading rate to:



a. Difficulty [21i]

Objective:
The child adjusts his reading rate appropriately as reading materials become more or less difficult as purposes change. (The child reads a given type of material e.g., science material written at his independent reading level of difficulty at a more rapid rate [greater number of words per minute] than similar material written at his instructional level of reading difficulty.)

b. Purpose [22]

Objective:
The child skims materials at a rapid rate when seeking to verify or locate specific information; he reads material at a lower but rapid rate when seeking an overview or general idea regarding content; and he scans material at a relatively slow rate when his purpose is to master or locate to verify and recall factual information.

12. Organizes and evaluates materials

a. Has beginning outlining skills [23]

Objective:
Given the major points in a formal outline the child is able to select and fill in second-order points from well organized paragraphs written at his instructional level of difficulty, e.g.,

I. Birds are alike in many ways.
   A.
   B.
   C.

II. A bird's feathers are useful.
   A.
   B.
   C.

b. Makes simple bibliographies [24]

Objective:
The child lists books he has consulted by author and title.

c. Draws inferences and makes generalizations [25]

Objective:
Given facts, the child is able to respond correctly to questions requiring that he make inferences and make generalizations on the basis of the facts presented.

d. Evaluates information in terms of his own experience and/or known facts [26]

Objective:
The child relates new information to his personal experiences and/or known facts, and evaluates both new information and the past experiences and knowledge in terms of the relationship.

NOTE: Assessment of this objective is most realistically based on observations over a period of time. One basis for assessment would be observations of reactions to commercial advertisements of products with which the child has had experience. The child should be able not only to criticize in terms of his personal experience but also to re-evaluate his past observations in light of new information; e.g., note when a product had been inappropriately used, recognize unrealistic expectations.

Level F

1. Uses point, line and area symbols [1]

Objective:
The child is able to use point, line and area symbols to derive qualitative and quantitative information from maps.

2. Has location skills [2]

Objective:
The child is able to use lines of latitude and longitude to locate points on a map or globe; e.g., New York City is 40° north latitude and 74° west longitude.

3. Has measurement skills

a. Identifies differences among maps drawn to different scales; e.g., 1" = 1000 miles, 1" = 100 miles, and 1" = 50 miles [3]

Objective:
The child is able to identify differences (e.g., amount of detail) among maps of the same area drawn to different scales; e.g., 1" = 1000 miles, 1" = 100 miles, and 1" = 50 miles.

b. Makes use of scale to determine distance [4]

Objective:
The child is able to use a scale bar referent or verbal referent (i.e., "1 inch = X standard units of measure) to compare and determine distances between points that are combinations of fractional and whole referent units apart when one referent unit equals two or more standard units of measure; e.g., when 1 inch = 10 miles, the child concludes that 2½ inches = 25 miles.

4. Has graph skills

a. Bar graphs [5]

Objective:
Given a horizontal or vertical bar graph which has two groups of bars, the child is able to

1) determine the purpose *(see B.4.a)*
2) compare relative amounts *(see B.4.b)*
3) extract directly *(see E.4.b.3)*
4) extract by interpolating *(see E.4.b.4)*

5) determine differences between numbers extracted
(compare, by addition, subtraction, multiplication, and/or division pairs of numbers extracted)

6) make a summary statement
(see D.4.a.5)

7) make projections and relate information
(see E.4.a.7)

b. Circle graphs [6]

Objective:
Given a circle graph with four or more divisions, the child is able to

1) determine the purpose *(see B.4.a)*
2) compare relative amounts *(see B.4.b)*
3) extract directly *(read indicated amounts)*
4) make a summary statement
(see D.4.a.5)

c. Line graphs [7]

Objective:
Given a single line, noncumulative line graph, the child is able to

1) determine the purpose *(see B.4.a)*
2) compare relative amounts *(see B.4.b)*
3) extract directly *(note where a point on a line falls with respect to axis and coordinate referents)*
4) extract by interpolating *(note where a point on a line falls with respect to axis and coordinate referents)*
5) determine differences between numbers extracted
(see F.4.a.5)
6) make a summary statement
(see D.4.a.5)
7) make projections and relate information
(see E.4.a.7)

5. Interprets schedules [8]

Objective:
Given a simple schedule (e.g., boat, bus) the child is able to

a. determine the purpose *(see B.5.a)*
b. locate a cell *(see B.5.b)*
c. compare relative amounts in a single dimension
(see C.5.c)
d. determine relationship among cells
(see D.5.d)
e. make a summary statement
(select from schedules the information required by given situations, e.g., from a travel schedule, select the departure time and carrier required to arrive at a given location at a given time)

6. Has independent classroom and research work habits [9]

Objective:
The child is able to focus all previously mastered study skills in independent study and/or research.

NOTE: The objective is the same as at Level E. The child's ability to direct his work independently would, of course, increase from level to level.

7. Increases locational facility

a. Refines card catalog skills [10]

Objective:
The child is able to locate target card quickly by applying these filing rules: (a) names beginning with either Mac or Mc are filed together as if all were spelled m-a-c; (b) if a word has been abbreviated, as Mr., it is filed as if it were spelled out; and, (c) if numbers are used they are filed as if they were spelled out.

b. Refines cross reference skills [11]

Objective:
The child applies the cross reference skill in D 7.c to all types of reference books.

8. Expands book skills [12]

Objective:
The child (a) consults the bibliography of a subject book to help him locate other materials of interest, and/or (b) uses the special study aids in textbooks (glossaries, appendices) to help master factual information.

9. Expands facility in using library [13]

Objective:
The child is able to locate (a) any book or material by its call number, and/or (b) many subject areas by using the ten major groupings of the Dewey Decimal System (i.e., 000 - General works, 100 - Philosophy, 300 - Social science, 400 - Language, 500 - Pure science, 600 - Technology, 700 - Art, 800 - Literature, 900 - History).

10. Expands use of reference materials

a. Uses dictionaries for pronunciation [14]

Objective:
The child is able to use the diacritical markings in a dictionary to interpret the pronunciation of unfamiliar words–e.g., Charybdis, escutcheon, imbroglio, spiegeleisen.

b. Uses "SEE ALSO" directions [15]

Objective:
Given a SEE ALSO direction, the child locates the referred topic to find supplementary information.

c. Uses *Subject Index to Children's Magazines* [16]

Objective:
The child (a) searches for current information in the subject index, and/or (b) tries to relocate specific articles read previously.

11. Adjusts reading rate to:

a. Difficulty [17]

Objective:
The child adjusts his reading rate appropriately as reading materials become more or less difficult as purposes change. (The child reads a given type of material—e.g., science material—written at his independent reading level of difficulty at a more rapid rate [greater number of words per minute] than similar material written at his instructional level of reading difficulty.)

b. Purpose [18]

Objective:
The child skims materials at a rapid rate when seeking to verify or locate specific information; he reads material at a lower but rapid rate when seeking an overview or general idea regarding content; and he scans material at a relatively slow rate when his purpose is to master or locate to verify and recall factual information.

NOTE: The objective is the same as at Level E. The difficulty of selections would, of course, increase from level to level.

12. Organizes and evaluates materials

a. Makes notes of main ideas and supporting facts [19]

Objective:
The child is able to identify main ideas and supporting facts in a selection and make notes in his own words.

b. Summarizes materials [20]

Objective:
The child is able to write concise summaries—e.g., identify major issues or main points of view expressed—of expository materials.

Level G

1. Has representation skills

a. Identifies likenesses and differences between two or more areas [1]

Objective:
The child is able to make comparisons of geographic areas in terms of topographic, climatic, political, and demographic information provided on maps.

b. Synthesizes information about an area [2]

Objective:
The child is able to use a variety of maps (e.g., topographic, climatic, political, and demographic) of a given area to determine specific characteristics; e.g., the child infers that since a particular area has an average rainfall, gently rolling hills and moderate climate, the occupations of the inhabitants may be mostly farm oriented.

2. Uses meridians and parallels to determine directions on any projection [3]

Objective:
The child is able to use meridians and parallels to determine directions on any projection; e.g., on an elliptical projection with the Prime Meridian at the center, the child traces the meridian from a given point to the pole to show north or south.

3. Has measurement skills

a. Locates the same point or cell on various projections [4]

Objective:
The child is able to locate the same point or cell on various projections; e.g., polar, Mercator.

b. Uses inset maps to determine relative size of areas [5]

Objective:
The child is able to determine the relative size of two or more areas drawn to different scales by comparing the inset maps, which are all drawn to the same scale; e.g., the child determines that even though his map of Rhode Island and Texas are the same size, Texas is indeed larger since the area outlined on the inset map (which is of the U. S.) is much larger than that area outlined for Rhode Island.

4. Has graph skills

a. Bar graphs [6]

Objective:
Given a horizontal or vertical bar graph which has three to four groups of bars, the child is able to

1) determine the purpose *(see B.4.a)*
2) compare relative amounts *(see B.4.b)*
3) extract directly *(see E.4.b.3)*
4) extract by interpolating *(see E.4.b.4)*
5) determine differences between numbers extracted *(see F.4.a.5)*
6) make a summary statement *(see D.4.a.5)*
7) make projections and relate information *(see E.4.a.7)*

b. Line graphs [7]

Objective:
Given a single or multiline cumulative or noncumulative line graph, the child is able to

1) determine the purpose *(see B.4.a)*
2) compare relative amounts *(see B.4.b)*
3) extract directly *(see F.4.c.3)*
4) extract by interpolating *(see F.4.c.4)*
5) determine differences between numbers extracted *(see F.4.a.5)*
6) make a summary statement *(see D.4.a.5)*
7) make projections and relate information *(see E.4.a.7)*

5. Interprets schedules [8]

Objective:
Given any schedule the child is able to:

a. determine the purpose *(see B.5.a)*
b. locate a cell *(see B.5.b)*
c. compare relative amounts in a single dimension *(see C.5.c)*
d. determine relationship among cells *(see D.5.d)*
e. make a summary statement *(see F.5.e)*

6. Has independent classroom and research work habits [9]

Objective:
The child is able to (a) focus all skills developed to this point on one problem, and (b) apply all relevant skills in all subject matter areas.

7. Refines book skills [10]

Objective:
The child is familiar with some reference books and their idiosyncratic organization (e.g., indexes are usually found in the back of a book, but the index to the *World Almanac* is in the front).

8. Increases facility in using library

a. Uses all information on catalog cards [11]

Objective:
The child uses the information given on a catalog card–date of publication, publisher, number of illustrations, type of illustrations–to decide if the book or other material is appropriate to his purpose.

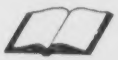
b. Increases understanding of Dewey System [12]

Objective:
The child is able to locate numbers for sections more specific than the ten major groupings as his interests become more specialized (i.e., 391 - costumes, 394 - holidays, 520 - astronomy, 540 - chemistry, 597 - fishes, 796 - sports, 92 or B - biography, 917 - travel in North America (inf. about states), 970 - Indians, 973 - American history.

9. Expands use of reference materials: current periodical indexes [13]

Objective:
The child uses (a) *Subject Index to Children's Magazines* for locating materials in children's magazines and (b) *Abridged Reader's Guide* for locating material in general adult magazines.

10. Adjusts reading rate to:



a. Difficulty [14]

Objective:
The child adjusts his reading rate appropriately as reading materials become more or less difficult as purposes change. (The child reads a given type of material–e.g., science material–written at his independent reading level of difficulty at a more rapid rate [greater number of words per minute] than similar material written at his instructional level of reading difficulty.)

b. Purpose [15]

Objective:
The child skims materials at a rapid rate when seeking to verify or locate specific information; he reads material at a lower but rapid rate when seeking an overview or general idea regarding content; and he scans material at a relatively slow rate when his purpose is to master or locate to verify and recall factual information.

NOTE: The objective is the same as Levels E and F. The difficulty of selections would, of course, increase from level to level.

11. Organizes and evaluates materials

a. Gains skill in note taking [16]

Objective:
The child is able to take notes from varied sources in a form that is useful to him; i.e., permits him to retrieve information as needed.

b. Makes formal outlines [17]

Objective:
Given selections written at his instructional level of difficulty, the child is able to select and order main points in a formal outline (e.g., I.A.L.).

APPENDIX B

Study Skills Field Test Schools

SCHOOL NAME	LOCATION	CATEGORY	ORGANIZATION
SCHOOLS WITH TYPICALLY HIGH READING ACHIEVEMENT			
Johnston	Appleton, Wis.	small city	unitized
McKinley	Appleton, Wis.	small city	unitized
Barstow	Eau Claire, Wis.	small city	unitized
Locust Lane	Eau Claire, Wis.	small city	unitized
Manz*	Eau Claire, Wis.	small city	unitized
Whitney	Green Bay, Wis.	small city	unitized
Central	Lake Geneva, Wis.	small city	unitized at K-2; self-contained at 3-6
McFarland Elementary and Elvehjem Middle	McFarland, Wis.	suburban or fringe	unitized
River Heights	Menomonie, Wis.	small city	unitized
Oregon Elementary and Oregon Middle	Oregon, Wis.	suburban or fringe	self-contained at K-3 unitized at 4-6
Parkview	Plymouth, Wis.	small city	unitized for reading
Jackson	West Bend, Wis.	rural, village	unitized
Bear Creek	Lakewood, Colo.	suburban	originally unitized, changed to self-contained during field test
Belmar	Lakewood, Colo.	suburban	self-contained (departmentalized)
Fairmount	Lakewood, Colo.	suburban	self-contained (grade level meetings)
Fitzmorris	Lakewood, Colo.	suburban	self-contained (grade level meetings)
Maple Grove	Lakewood, Colo.	suburban	self-contained (grade level meetings)

*All schools except for this school participated in the Type I Word Attack Field Test.

SCHOOL NAME	LOCATION	CATEGORY	ORGANIZATION
SCHOOLS WITH TYPICALLY LOW READING ACHIEVEMENT			
Green Bay Avenue	Milwaukee, Wis.	inner-city	self-contained
Keefe Avenue	Milwaukee, Wis.	inner-city	self-contained
LaFollette	Milwaukee, Wis.	inner-city	self-contained
Philipp	Milwaukee, Wis.	inner-city	self-contained
Franklin	Milwaukee, Wis.	inner-city	unitized for reading (but not Study Skills)

APPENDIX C

Memoranda of Agreement

MEMORANDUM OF AGREEMENT

Wisconsin Design for Reading Skill Development: Study Skills

The Wisconsin Research & Development Center for Cognitive Learning and the _____School District agree cooperatively to field test during the 1971-72 academic year instructional materials in Reading developed by the Center.

The Center will provide:

1. Support for the testing of pupils in half the participating schools.
2. A management system to facilitate record keeping and easy use of the records. (The school will be expected to provide file boxes and punches [notchers] used to keep these records.)
3. Test associated with the gathering of criterion data.
4. Feedback to school systems regarding the field test results in the form of a written report. The initial report will be provided by January 30, 1972, with a more extensive report to follow by May 30, 1972.

While the Center will provide consultant services as required, the school system should recognize that the purpose of the field tests is to ascertain whether the product can be used in a system with the support only of the local central staff. To the degree the Center's services are required the field test is unsuccessful. This is not meant to imply that we do not wish to know of gaps in the existing materials; we simply wish to indicate that the system is expected to supply the resources at hand normally provided in support of any reading program.

The system agrees to:

1. Make available at least two full days of staff inservice for all new participating teachers. This inservice will be conducted by the local leaders who have attended a Center-conducted conference. Of the two days inservice at least one day will be scheduled before school begins; the other scheduled during the school year.
2. Coordinate the school system's testing program with the Center's testing program.

3. Engage all eligible K-6 pupils and staff in the participating school(s) in the program.

4. Pay any shipping costs for sending tests to the vendor for machine scoring.

5. Devote an adequate amount of time (to be specified later) to the teaching of study skills. Instruction will be based on the continuous progress of the child without respect to the grade or "level" designations.

6. Provide up to 2 hours of pupil time for the gathering of criterion data yearly, apprise the Center of the local testing program and share with the Center any intelligence or achievement data from the participating schools gathered through the system's testing program.

7. Inform the Center in advance of school boundary changes affecting over 10% of the enrollment of a given school, so that termination of the test at the affected grade levels can be jointly considered.

8. Provide an adequate amount of time during the 1971-72 school year for purposes of gathering data on pupils now in grades K-6. Teachers presently in the building will administer the tests.

9. Provide sufficient instructional materials to carry out a comprehensive program of study skills.

_____ _____

Herbert J. Klausmeier, Director (signed)

Wisconsin Research and Development
Center for Cognitive Learning _____

(position)

MEMORANDUM OF AGREEMENT

between

The Wisconsin Research and Development Center for Cognitive Learning

and

_____

The Wisconsin Research and Development Center for Cognitive Learning (Center) and _____(District) agree cooperatively to field test during the 1972-73 academic year instructional materials for the Study Skills area of the Wisconsin Design for Reading Skill Development. The field test will be conducted in _____ _____ School(s) with all children in their second through seventh (Gr. 1-6) years of school. The Center agrees to advise its vendor, National Computer Systems, to fill orders for materials placed by the school district.

A. The Center will provide at no cost to the District:

1. All field test materials for teachers.
2. Machine scoring of tests for participating pupils.
3. Tests associated with the gathering of criterion data.
4. Feedback to school systems regarding the field test results in the form of a written report. The initial report will be provided by January 30, 1973, with a more extensive report to follow by May 30, 1973.
5. Consultant services as required. However, the school system should recognize that the purpose of the field test is to ascertain whether the product can be used in a system with the support only of the local central staff. If Center consultant services are required to any great extent, the field test could be considered unsuccessful. This is not meant to imply that we do not wish to know of gaps in the existing materials; we simply wish to indicate that the system is expected to supply the resources at hand normally provided in support of any reading program.

B. The District will insure that the participating school(s)

1. Provide all field test instructional materials for pupils.

2. Provide all other instructional materials for pupils necessary to carry out a comprehensive program of Study Skills.

3. Make available at least one-half day of staff inservice for participating teachers. This inservice will be conducted by the local leaders. New teachers will receive additional orientation to the Design in its entirety.

4. Engage all eligible 1-6 pupils and staff in the participating school(s) in the program. Kindergarten implementation is optional.

5. Devote two hours weekly in each school to the teaching of Study Skills. Instruction will be based on the continuous progress of the child without respect to grade or "level" designations.

6. Provide up to 2 hours of pupil time for the gathering of criterion data yearly, provide teachers to administer such tests, apprise the Center of the local testing program and share with the Center any intelligence or achievement data from the participating schools gathered through the system's testing program.

7. Pay any shipping costs for sending tests to the Center for processing or to the vendor for machine scoring.

8. Coordinate the school system's testing program with the Center's testing program.

9. Inform the Center in advance of school boundary changes affecting over 10% of the enrollment of a given school, so that termination of the test at the affected grade levels can be jointly considered.

C. The terms of this agreement will be from the time it is fully executed until June 30, 1973. However, the Center reserves the right to gather follow-through data until December, 1973. It is furthermore understood that this is the second and last of a two-year test of the Study Skills element.

Accepted by:

William R. Bush, Deputy Director

Wisconsin Research and Development
Center for Cognitive Learning

Date

Agreed to:

(Signed)

(Title)

(District)

(Date)

MEMORANDUM OF AGREEMENT

between

The Wisconsin Research and Development Center for Cognitive Learning

and

The Milwaukee Public Schools

The Wisconsin Research and Development Center for Cognitive Learning (Center) and The Milwaukee Public Schools (District) agree cooperatively to field test during the 1972-73 academic year instructional materials for the Study Skills area of the Wisconsin Design for Reading Skill Development. The field test will be conducted in Green Bay Avenue, Keefe Avenue, Phil pp, LaFollette, and Franklin School(s) with all children in their second through seventh (Gr. 1-6) years of school. The Center agrees to advise its vendor, National Computer Systems, to fill orders for materials placed by the school district.

A. The Center will provide at no cost to the District:

1. Seventy-five percent (75%) of all field test materials for both teachers and pupils.

2. Seventy-five per cent (75%) of the machine scoring of tests for participating pupils.

3. Tests associated with the gathering of criterion data.

4. Feedback to school systems regarding the field test results in the form of a written report. The initial report will be provided by January 30, 1973, with a more extensive report to follow by May 30, 1973.

5. Consultant services as required. However, the school system should recognize that the purpose of the field test is to ascertain whether the product can be used in a system with the support only of the local central staff. If Center consultant services are required to any great extent, the field test could be considered unsuccessful. This is not meant to imply that we do not wish to know of gaps in the existing materials; we simply wish to indicate that the system is expected to supply the resources at hand normally provided in support of any reading program.

B. The District will insure that the participating school(s) will:

1. Provide twenty-five per cent (25%) of all field test instructional materials for pupils, including machine-scoring.

2. Provide all other instructional materials for pupils necessary to carry out a comprehensive program of Study Skills.

3. Make available at least one-half day of staff inservice for participating teachers. This inservice will be conducted by the local leaders. New teachers will receive additional orientation to the Design in its entirety.

4. Engage all eligible 1-6 pupils and staff in the participating school(s) in the program. Kindergarten implementation is optional.

5. Devote two hours weekly in each school to the teaching of Study Skills. Instruction will be based on the continuous progress of the child without respect to grade of "level" designations.

6. Provide up to 2 hours of pupil time for the gathering of criterion data yearly, provide teachers to administer such tests, apprise the Center of the local testing program and share with the Center any intelligence or achievement data from the participating schools gathered through the system's testing program.

7. Pay any shipping costs for sending tests to the Center for processing or to the vendor for machine scoring.

8. Coordinate the school system's testing program with the Center's testing program.

9. Inform the Center in advance of school boundary changes affecting over 10% of the enrollment of a given school, so that termination of the test at the affected grade levels can be jointly considered.

C. The terms of this agreement will be from the time it is fully executed until June 30, 1973. However, the Center reserves the right to gather follow-through data until December, 1973. It is furthermore understood that this is the second and last of a two-year test of the Study Skills element.

Accepted by:

William R. Bush, Deputy Director

Wisconsin Research and Development
Center for Cognitive Learning

(Date)

Agreed to:

(Signed)

(Title)

(District)

(Date)

APPENDIX D

Data-Gathering Instruments Used for Evaluation of Objectives 2, 3, and 4

[These instruments have been condensed to save space]

Instrument 1

WDRSD - INTERVIEW GUIDE

Directions: This form is only a guide; modify your questions as necessary to get information.

Monitor_____

Date_____

School_____

Person Interviewed_____

_____

Position_____

Word Attack Follow-up . . .

STUDY SKILLS (M, G & T) IMPLEMENTATION

1. How much time is currently being allotted to the Study Skills program? Specify by grade if necessary. How is this time distributed among subject areas--if "taken" from them--or is the Study Skills program conducted independently?

2. Elaborate on K-1 implementation if any. (E.g., were Level A tests used? Pretesting strategies? Level B testing?)

3. Are "formal" Study Skills groups formed (pretest, instruction, posttest, etc.)? How are the activities and composition of these groups correlated with the overall content of Social Studies (Science, Math, etc.)? How long are the Study Skills group cycles?

4. What problems in general have you had implementing the Study Skills program? (E.g., retesting, scheduling, integration with content, grouping)

5. What is the general reaction among your students and staff to the Study Skills program?

Instrument 2

WDRSD Type I Field Test
End-of-Year Questionnaire

for PRINCIPALS or COORDINATORS ONLY

Name_____

School_____

Map, Graph & Table Skills Implementation

1. Which statement best describes your school's Map, Graph & Table skills implementation strategy this year? (If the answer differs for different grade levels, please so indicate.)

____The Study Skills program (Map, Graph & Table) was taught as a separate skill area (in "isolation").

____The Study Skills program (Map, Graph & Table) was taught in direct conjunction with the social studies, science and math curricula.

____Other_____

_____

Comments:

LAST MINUTE QUESTIONS . . .

Will you, as principal, be working in your building this summer?___Yes ___No

If "no" what is the last date we can reach you in the building?_____

If "yes" on what dates (approximately) during the summer can we contact you at school?_____

On what date does school resume for the children (not inservice) this fall?

Continuation of Word Attack . . .

Schoolwide Goalsetting-Word Attack . . .

Fall Inservice Plans for Study Skills (Reference)

1. What is the date and approximate time for your fall inservice session on implementation of the Reference Skills subarea? (There will be no R&D meeting.)

   Date:

   Time:_____to_____

   Comment:

2. What are your plans for Design inservice for new teachers?

School Organization

1. Do you anticipate any school organizational changes for fall? If so, please specify (e.g., formation of a K-1 unit, creation of two Grade 1-3 units, change from grade level teams to cross-graded units, etc):

2. If so, has utilization of the Design directly influenced these changes?

   ____Yes, please explain below. _____No

3. Has utilization of the Design directly influenced your staff in any of the following?

   Increased professionalism____Yes ____No

   Increased use of consultants ____Yes ____No

   Improved rapport among staff ____Yes ____No

   Extension of teaming and cooperative planning to other subject matter areas ____Yes ____No

Areas 4, 5, 6--Last Call! . . .

Enrollment Check

1. Please state the total number of Grade 1-6 students (excluding Kindergarten) enrolled in your school:____Grade 1-6 students

2. What is your Kindergarten enrollment? ____Kindergarten students

3. Please state the total number of teachers (excluding Kindergarten, special education, art-music teachers, etc.) in your school: _____Grade 1-6 teachers

4. How many Kindergarten teachers are there? _____Kindergarten teachers

Many, many thanks for completing this questionnaire!
Please return in one of the enclosed envelopes.

Instrument 3

WDRSD Type I Field Test
End-of-year Questionnaire (K-1, 2)

Distribute only to K and Grade 1 unit or grade level leaders. Grade 2 staff should be included when appropriate.

Name of School_____

DIRECTIONS: This questionnaire concerns the Level A Map Skills Performance Tests (in the pink-covered booklets). Please return it in one of the envelopes provided.

1. Check your status. ____K teacher ____Grade 1 teacher____Grade 2 teacher

2. Did you ever use any of the Level A Map Skills tests? ____Yes ____No

   if "yes," please answer the remaining questions.

   If "no," please return the questionnaire now.

* * * * * * * * * * * * *

3. Which of the tests have you used? (either self-administered or aide-administered)

   _____Test 1 (Position of Objects) ____Test 2 (Measurement: Size)

   _____Test 3 (Measurement: Distance)

4. About how long did each test take to administer?

Test 1	Test 2	Test 3
____0-1 minutes	____0-1 min.	___0-1 min.
____2-3 minutes	____2-3 min.	___2-3 min.
____4-5 minutes	____4-5 min.	___4-5 min.

5. How and why were the tests used? (check all that apply)

____as pretests to identify children who needed Level A instruction

____as posttests <u>after Level A instruction</u> to assess mastery

____to identify children who already had mastered Level A skills <u>without instruction</u> and therefore might be ready to begin Level B

____other_____

_____

6. Which children were given the tests? (check all that apply)

For each group checked, estimate the % of children who were masters of the skill. (if none, put 0%.)

	Test 1	Test 2	Test 3
____all children in my class or grade level	_____	_____	_____
____only children whose mastery of the skills I was uncertain about	_____	_____	_____
____only "slower" children	_____	_____	_____
____all children who had received instruction in the Level A skills	_____	_____	_____
____only children who had non-mastery on all (or all but one) of the Level B Map skills	_____	_____	_____
____other_____	_____	_____	_____

_____

_____

6.	Test 1	Test 2	Test 3
EXAMPLE: ✓ only "slower" children	100%	75%	95%

7. Which statement below best describes the relationship between mastery on the Level A Map Tests and readiness for Level B Map Skills?

_____All or almost all children who demonstrated mastery on the Level A performance tests were definitely able to work successfully on Level B Map Skills.

_____Some masters of Level A Map Skills were ready for Level B but there were other Level A masters who could not handle the Level B Map Skills.

_____Very few children who were masters of the Level A Map Skills could then successfully work on Level B Map Skills.

8. These tests were available to you for the March-May period only. In your judgment for the grade level you checked above only, when would these tests be most appropriately used?

	Sept-Nov	Dec-Feb	March-May
For above average students	_____	_____	_____
For average students	_____	_____	_____
For below average students	_____	_____	_____

9. Did you find yourself re-wording the questions on these tests in order to get the children to understand the task?

_____Yes, always _____Yes, usually _____Yes, sometimes _____No, rarely or never

10. Did children who you judged by teacher observation as masters actually show mastery on these Level A tests? (That is, were your expectations of mastery confirmed?)

_____Yes, always _____Yes, usually _____Yes, sometimes _____No, rarely or never

11. Did children whom you would have judged as non-masters actually show non-mastery on the tests? (That is, were your expectations of non-mastery confirmed?)

_____Yes, always _____Yes, usually _____Yes, sometimes _____No, rarely or never

12. In your opinion would "teacher judgment" of mastery/non-mastery on these Level A objectives have been sufficient?

____Yes, teacher judgment would suffice.

____No, the Level A Map Tests are necessary to assure an accurate assessment.

Comment:

13. Which statement(s) describes your use of the Response Record Form on page 9 of the pin[illegible]ts?

____I never used the form

____I completed a form for every child tested

____I referred to the completed forms during later instructional planning for students

____other:_____

_____

14. Did you ever use aides to administer the tests?

____Yes, always ____Yes, usually ____Yes, sometimes ____No, rarely or never

15. Did you find the materials for the tests difficult to secure?

____Yes, always ____Yes, usually ____Yes, sometimes ____No, rarely or never

16. Any additional comments you wish to make would be welcome. The Center is revising all performance tests for Map, Graph & Table Skills and is creating many such tests for the Reference Skills subarea, so we would appreciate your suggestions. Further comments:

Many, many thanks for completing this questionnaire!
Please return in one of the enclosed envelopes.

Instrument 4

Monitoring Guide
Study Skills - Type I
First Visit
(Principal)

School_____ Date_____

Interviewee_____ Monitor_____

Position_____

Map, Graph and Table Follow-up

1. Have you altered last year's strategy regarding the implementation of M, G & T? If so, what caused you to change and what are you doing differently? (check on K-1 implementation)

2. How much inservice time did you devote to M, G & T this fall?

3. How much (dollars) have you spent in purchasing non-Design materials for use this fall in M, G & T?

   How much (dollars) have you spent in purchasing Design materials in continuing M, G & T?

4. What problems have you had in continuing M, G & T? Do you have any recommendations in this regard?

Reference Skills

5. Did you use the break-in testing recommendations for Reference Skills (same level as current M, G & T Level)? If so how did it work? If not, what strategy did you use and how did it work?

6. When was your Reference Skills inservice? May we have a copy of the agenda? If not, what was the agenda? (Look for length, participants, time, keying of materials.)

7. Have you included the IMC director/librarian in your strategy for implementing Reference Skills? If so, how? (Look for change or integration of past role.)

8. Is the strategy for implementing Reference Skills any different than that for M, G & T? (May not need this question, because of 2. Look for skill group pattern, i.e., length, skills per teacher, size of group, schedule for assessment, regrouping period, skill clustering, skill groups across grades, A-B fit, subgrouping.)

9. How much (dollars) was spent in implementing Reference Skills?
_____(non-Design)

10. What has been the turn around time for NCS? Any other comments regarding NCS? (be specific)

11. How much more time will you be spending on keying local materials? How will the time be provided?

GET COMMENT CARDS!!!

Instrument 5

Monitoring Guide
Study Skills - Type I
First Visit
(Teacher)

School_____ Date_____

Interviewee_____ Monitor_____

Position_____

Map, Graph and Table Follow-up

1. Do you have any evidence of skill loss or skill gain over the summer? If so--which?_____What did you do about it?

2. Have you altered last year's strategy regarding the implementation of M, G & T? If so, what caused you to change and what are you doing differently? (Check on K-1 implementation.)

3. Was the inservice adequate?

4. Was the Addenda useful? Did you adopt any of the recommendations?

   Which and how are they working?

5. What problems have you had in continuing M, G & T? Do you have any recommendations in this regard?

Reference Skills

6. Did you use the break-in testing recommendations for Reference Skills (same level as current M, G & T level)? If so how did it work? If not, what strategy did you use and how did it work?

7. Was the inservice adequate?

8. Is the strategy for implementing Reference Skills any different than that for M, G & T? (May not need this question, because of 2. Look for skill group pattern. i.e., length, skills per teacher, size of group, schedule for assessment, regrouping period, skill clustering, skill groups across grades, A-B fit, subgrouping.)

9. How are you handling the individually assessed objectives? (placement, preassessment, postassessment, instructional pacing)

10. Is each child's progress monitored by a single teacher or a number? How do you keep track of his development?

11. Have you found a need for more record keeping devices? Any recommendations?

12. Have you found whether individual student progress across subareas is parallel, e.g., if at Level D in Maps, is he at Level D in Graphs and Tables?

13. How much more time will you be spending on keying local materials? How will the time be provided?

14. Do you make use of the fact that there are strands in SS (work habits, location, book skills, library use)? If so, how?

15. Do you make use of the growth charts?

16. Are there any errors, omissions or confusions in the materials? (TRG___, TRF___, Tests___, (specific) _____, pupil record cards____, Growth charts _____, other _____) Do you have any recommendations?

GET COMMENT CARDS!!

Instrument 6

Sample 2 Design Interview Guide
Principal (or reading specialist)

Name_____Position_____

School_____Interviewer_____

I INSERVICE; KEYING MATERIALS FOR STUDY SKILLS

1a. How much inservice time have you devoted to the Study Skills program this school year? If possible, distinguish between the time spent specifically on Map, Graph & Table subarea follow-up and that devoted to inservice for the Reference skills subarea.

May we have a copy of the agenda?

1b. What were the weaknesses or problems associated with your inservice?

1c. In addition to any keying of local materials to the resource files done as a part of the inservice specified in #1a, what further time has been devoted to keying?

What, if any, future time is planned for keying?

II. STUDY SKILLS COSTS

2a. How much (dollars) have you spend in purchasing non-Design materials for use this fall in the Study Skills program? If possible, distinguish between the amount spent to continue the Map, Graph & Table program from expenditures for the Reference subarea.

2b. How much (dollars) have you spent in purchasing Design materials for use this fall in the Study Skills program? If possible, distinguish between the amount spent to continue the Map, Graph & Table program from expenditures for the Reference subarea.

III. IMPLEMENTATION

3a. What is your school's overall strategy for implementing the Study Skills program? How was your IIC (if one exists) involved in planning this schoolwide strategy?

What are the differences, if any, between your use of the Map, Graph & Table subareas and your Reference subarea implementation?

3b. How has the IMC director/librarian been included in Study Skills implementation, particularly for Reference Skills? E.g., suggests activities or media to other staff; teaches certain skill groups; keys. Be specific--if he teaches, how often? Which students?

3c. What general implementation problems have you had with the Study Skills program?

3d. What specific recommendations would you give to the Center for revisions in the Study Skills program?

Instrument 7

Sample 2 Design Interview Guide
Unit Leaders

Name _____ Position _____

Grade Levels _____ School _____

Interviewer _____

I. PERIOD OF IMPLEMENTATION

Note to interviewer: Since there probably was a period of M, G&T implementation last spring, you will have to be very careful to distinguish between students who were, for example, in Grade 1 last April-May, but who now are in Grade 2. The answers to questions 1a-1c should clearly indicate the grade level and the point in time you are referring to.

1a. When (nearest month) did you actually begin the Study Skills program so that all students were consistently and continuously receiving skill instruction (not break-in or retest dates)?

M, G & T:	R:
K	K
Gr. 1	Gr. 1
2	2
3	3
4	4
5	5
6	6

1b. Have there been any periods of time (e.g., September) when the program was temporarily halted? When and why and which students?

M, G & T: R:

1c. Are there any exceptions to 1a? (e.g., K not implementing, Grade 1 started later, only "top" students in Grade 3 involved in R skills, etc.)

II. PATTERNS OF IMPLEMENTATION

Note to interviewer: The intent of the following series of questions is to get a precise description of the SS program operation for the particular unit or grade level. Please elaborate at will.

2a. From what larger organizational group are your Study Skills groups (if any) drawn? For example, are the groups drawn from the entire unit? from an entire single grade level of a two grade level unit? within homerooms only? within reading groups only? within social studies class?

2b. Referring to your answer for 1a, has the basic group of children remained the same throughout the program? For example, are the 30 children in the homeroom in October still in the homeroom in January so that the SS groups are formed and reformed from these 30 children?

2c. Within the organizational group specified in 1a, on what basis are groups to work on specific skills formed? For example, all the students in the homeroom may be given instruction in the skill because it appears in the social studies content regardless of whether they have mastered it; or students may be grouped into several "common need" skill groups according to their profile cards; or students might individually choose a skill they have not mastered to work on.

2d. Who forms the skill groups? (e.g., the unit leader? the unit staff together? the homeroom teacher independently?)

2e. What use is made of the skill clusters?

2f. What use is made of the strands? (e.g., location, book skills)

2g. About how many students are usually in each skill group? Estimate the usual number, if possible; otherwise state range, say 15-20.

Usual Number:

Minimum: (specify if students generally work independently, "all" on different skills):

Maximum:

2h. How many different skill groups does a single teacher usually have responsibility for simultaneously? (a group of children working on a 3-skill cluster would be considered <u>one</u> group)

2i. How is it determined which skill(s) a particular teacher has responsibility for? (Note that if homeroom is the basic group, this question may be meaningless--please indicate if so.)

2j. For how many days does a skill group (or skill cluster group) actually last and work? (If the group lasts 3 weeks but only meets twice a week, it works 6 days.)

<u># of weeks groups last</u>	<u># of days groups work</u>
Usually:	Usually:
Minimum:	Minimum:
Maximum:	Maximum:

2k. How long per day (how many minutes) does each skill group generally work?

Usually:

Minimum:

Maximum:

21. When a skill grouping period is over and new groups are formed, how does (if it does) the group composition change? (e.g., generally the same students are together again and again--it does not change; the groups are very different each time).

2m. How, if so, are the skills being taught related to content areas. Be specific! E.g., (1) whatever skills the content naturally includes are the skills taught, regardless of individual student mastery/non-mastery records, (2) if the content includes a skill the student needs, he receives instruction; if he is already a master, he is simply excused... or, he works on activities applying the skill...etc. (3) students receive instruction only in skills they have <u>not</u> mastered; then applications are "found" in the content areas, (4) content is developed to "fit" the Study Skills so that both instruction and application are closely related to content, (5) skills are taught separately from any content and when they come up naturally later they are reinforced; otherwise they are essentially dropped.

Give an example of your answer for Maps:

Graphs or Tables:

Reference Skills:

Why did you decide to use this particular approach to relating the Study Skills to content areas? (e.g., covering the textbook is required).

What are the successes and the problems associated with this approach?

Successes:

Problems:

How are the SS Resource Files used in conjunction with this approach? (i.e., which commercially-available keyed items are actually used? Which inserts are used? Are the inserts changed to fit local content? What are the Resource File inadequacies?)

2n. When, exactly does postassessment occur? (E.g., when each individual student is ready; when the grouping period is over regardless of when individual students complete the skill; every two months or so several skills are assessed) Who performs it?

Are any students ever excused from assessment? Why?

2o. How did placement for PT's, TO's take place? How does instruction and assessment proceed for these skills? Is the record chart used?

2p. Are the profile cards notched? If so, when?

2q. Are the profile cards actually skewered for grouping purposes?

2r. If not, how and when, if ever, are they used. (e.g., is growth chart used?)

2s. What are the important differences between M, G & T and R implementation relative to the questions just discussed?

2t. How is the school librarian or IMC director involved in SS instruction, particularly for R skills? Be specific!

III. STUDENT PROGRESS

Note to interviewer: The interviewee will have been asked to have his unit (homeroom, whatever) profile cards with him if possible.

3a. On the average, how many M, G & T skills has each child mastered since break-in?

Estimated Average:

Maximum:

Minimum:

3b. On the average, how many R skills has each child mastered since break-in?

Estimated Average:

Maximum:

Minimum:

3c. What M, G & T skill loss did you notice after the summer? (Note here whether there had been actual M, G & T instruction or whether the loss was related only to break-in status.)

3d. Have you noticed M, G & T or R skill loss after a child had been assessed a master (after instruction) this fall?

3e. What evidence do you have that students can (or cannot) apply skills they have mastered?

3f. Is progress generally "even" in M, G & T and R skills? What efforts do you make to keep it "even"? (e.g., if a child is at C level in M, G & T is he also at C level in R?)

IV. GENERAL INFORMATION

4a. How could the local Study Skills inservice sessions have been of more help to you?

4b. What are you currently doing in the way of expanding the SS Resource Files? Specify whether you are adding "inserts" and/or keying local texts, audio-visual aids, etc.

4c What is your student's general attitude toward the SS activities? tests?

4d. What is your unit (grade level) staff's general attitude toward the SS program?

4e. Can you give us some examples--including actual duplicating masters--of good Study Skills activities, expecially good reinforcement activities and good independent activities. May we get your written permission at a later date to copy them?

4f. What is your reaction to the 2-sided profile card? (e.g., should the label be printed only on one side; should one side be completely blank?)

4g. What errors in the resource file folders, inserts, tests, and test manuals have you noted? Be specific!

Any reactions to the two color test manuals?

V. GENERAL REMINDERS TO INTERVIEWER

(1) Collect comment cards.

(2) Collect duplicating masters, etc.

(3) Collect remaining test up/test down summaries.

Instrument 8

Comment Card
Study Skills

Date_____

Name_____

School_____

Material affected (be specific, e.g., include page number, level, skill number).

Question/Problem

Do you have any recommendations?

Success

APPENDIX E

Test Sittings

MAPS, GRAPHS AND TABLES TESTING PROGRAM IN SCHOOLS WITH READING ACHIEVEMENT AT OR ABOVE GRADE LEVEL
Fall 1971

GRADE 1

No tests

GRADE 2

Break-in*	Wisconsin Tests of Reading Skill Development: Level B

GRADE 3

Break-in	Wisconsin Tests of Reading Skill Development: Level C
Sitting I**	B 5 Measurement: distance (10)*** B 6 Picture graphs (15) B 7 Single column tables (15)
Sitting II	Iowa Tests of Basic Skills: Level 9 Maps (30) Graphs, Tables (20)

GRADE 4

Sitting I	B 5 Measurement: distance (10) C 7 Measurement: distance (15) D 5 Scale: whole units (20)
Sitting II	B 3 Picture grid (15) C 4 Street grid (15) D 3 Number - letter grid (15)
Sitting III	B 6 Picture graphs (15) C 8 Picture graphs (15) D 6 Picture graphs (15)

*Break-in tests are administered at a slightly different point in time than the sittings specified for other tests.

**While all pupils above grade 1 are administreed some level of test at break-in, only those levels taken by the specified age/grade groups are used in the evaluative analyses.

***Numbers in parentheses are testing times. For standardized tests the times are specific; for the Wisconsin Tests of Reading Skill Development the times are estimated.

Sitting IV	Iowa Tests of Basic Skills: Level 10
	Maps (30)
	Graphs, Tables (20)

GRADE 5

Break-in	Wisconsin Tests of Reading Skill Development: Level D
Sitting I	C 10 Multicolumn tables (15)
	D 9 Multicolumn tables (15)
	E 7 Multicolumn tables (20)
Sitting II	Iowa Tests of Basic Skills: Level 11
	Maps (30)
	Graphs, Tables (20)

GRADE 6

Sitting I	Wisconsin Tests of Reading Skill Development
	D 1 Nonpictorial symbols (20)
	E 1 Point & line symbols (15)
	F 1 Point, line, area symbols (20)
Sitting II	Wisconsin Tests of Reading Skill Development
	D 5 Scale: whole units (20)
	E 4 Scale: mult. whole units (15)
	F 4 Scale: fractional units (15)
Sitting III	Wisconsin Tests of Reading Skill Development
	D 7 Bar graphs (15)
	E 6 Bar graphs (15)
	F 5 Bar graphs (15)
Sitting IV	Iowa Tests of Basic Skills: Level 12
	Maps (30)
	Graphs, Tables (20)

MAPS, GRAPHS AND TABLES TESTING PROGRAM IN SCHOOLS WITH READING ACHIEVEMENT BELOW GRADE LEVEL
Fall 1971

GRADE 3

Sitting I	B 3	Picture grid (15)
	C 9	Bar graphs (15)
	C 10	Multicolumn tables (15)
Sitting II	B 5	Measurement: distance (10)
	B 6	Picture graphs (15)
	B 7	Single column tables (15)
Sitting III	Comprehensive Tests of Basic Skills, Level 1 Study Skills (26)	

GRADE 4

Sitting I	B 6	Picture graphs (15)
	C 8	Picture graphs (15)
	C 9	Bar graphs (15)
Sitting II	B 5	Measurement: distance (10)
	C 2	Semipictorial symbols (10)
	C 7	Measurement: distance (15)
Sitting III	Comprehensive Tests of Basic Skills, Level 1 Study Skills (26)	

GRADE 5

Break-in	Wisconsin Tests of Reading Skill Development: Level C	
Sitting I	B 3	Picture grid (15)
	C 4	Street grid (15)
	D 3	Number - letter grid (15)
Sitting II	D 4	Cardinal directions (20)
	D 6	Picture graphs (15)
	D 8	Circle graphs (10)
Sitting III	Comprehensive Tests of Basic Skills, Level 2, Study Skills (25)	

GRADE 6

Break-in	Wisconsin Tests of Reading Skill Development	
Sitting I	C 10	Multicolumn tables (15)
	D 9	Multicolumn tables (15)
	E 7	Multicolumn tables (20)
Sitting II	C 2	Semipictorial symbols (10)
	D 1	Nonpictorial symbols (20)
	E 1	Point & line symbols (15)
Sitting III	C 9	Bar graphs (15)
	D 7	Bar graphs (15)
	E 6	Bar graphs (15)
Sitting IV	Comprehensive Tests of Basic Skills, Level 2, Study Skills (25)	

REFERENCE SKILLS TESTING PROGRAM IN SCHOOLS WITH
READING ACHIEVEMENT AT OR ABOVE GRADE LEVEL
Spring 1972

GRADE 1

Sitting I — Wisconsin Tests of Reading Skill Development

B 10 Written Directions (15)
B 16 Classifies Ideas (10)
C 19 Judgments & Conclusions (10)

GRADE 2

Sitting I — Wisconsin Tests of Reading Skill Development

C 12 Alphabetizes (15)
C 13 Book Skills (15)
C 18 Ideas: Sequential Order (15)

Sitting II — Comprehensive Tests of Basic Skills, Form Q Level 1
Study Skills, Test 9 (26)

GRADE 3

Sitting I — Wisconsin Tests of Reading Skill Development

C 12 Alphabetizes (15)
D 12 Alphabetizes (15)
E 9 Alphabetizes (15)

Sitting II — Iowa Tests of Basic Skills, Form 6 Level 9
Test W-3: Knowledge and Use of Reference Materials (30)
+
Wisconsin Tests of Reading Skill Development

D 24 Selects Relevant Materials (15)

GRADE 4

Sitting I — Wisconsin Tests of Reading Skill Development

D 13 Guide Words (15)
D 22 Headings & Subheadings (10)
E 10 Guide Words (15)

Sitting II — Iowa Tests of Basic Skills, Form 6 Level 10
Test W-3: Knowledge and Use of Reference Materials (30)
+
Wisconsin Tests of Reading Skill Development

D 25 Checks Facts (15)

GRADE 5

Sitting I — Wisconsin Tests of Reading Skill Development

E 23 Outlining (15)
E 25 Infers to Generalize (15)
F 14 Dictionary: Pronunciation (15)

Sitting II — Iowa Tests of Basic Skills, Form 6 Level 11
Test W-3: Knowledge and Use of Reference Materials (30)
+
Wisconsin Tests of Reading Skill Development

E 19 Specialized References (15)

GRADE 6

Sitting I — Wisconsin Tests of Reading Skill Development

E 11 Card Catalog (15)
F 10 Card Catalog (15)
G 11 Catalog Cards (15)

Sitting II — Wisconsin Tests of Reading Skill Development

E 14 Library (15)
F 13 Library (15)
G 12 Dewey Decimal System (15)

Sitting III — Iowa Tests of Basic Skills, Form 6 Level 12
Test W-3: Knowledge and Use of Reference Materials (30)
+
Wisconsin Tests of Reading Skill Development

F 16 Subject Index to Children's Magazines (15)

REFERENCE SKILLS TESTING PROGRAM IN SCHOOLS WITH
READING ACHIEVEMENT BELOW GRADE LEVEL
Spring 1972

GRADE 1

Sitting I — Wisconsin Tests of Reading Skill Development

B 11 Letters & Digits (10)
B 15 Sequence: Pictures & Words (20)
B 16 Classifies Ideas (10)

GRADE 2

Sitting I — Wisconsin Tests of Reading Skill Development

B 10 Written Directions (15)
C 18 Ideas: Sequential Order (15)
C 19 Judgments & Conclusions (10)

GRADE 3

Sitting I — Wisconsin Tests of Reading Skill Development

C 12 Alphabetizes (15)
C 13 Book Skills (15)
C 18 Ideas: Sequential Order (15)

GRADE 4

Sitting I — Wisconsin Tests of Reading Skill Development

C 13 Book Skills (15)
D 17 Indexes (15)
D 24 Selects Relevant Materials (15)

GRADE 5

Sitting I — Wisconsin Tests of Reading Skill Development

D 12 Alphabetizes (15)
D 15 Table of Contents (10)
D 22 Headings & Subheadings (10)

Sitting II — Comprehensive Tests of Basic Skills, Form Q Level 2
Study Skills, Test 9: Using Reference Materials (16)
+
Wisconsin Tests of Reading Skill Development

D 25 Checks Facts (15)

GRADE 6

Sitting I — Wisconsin Tests of Reading Skill Development

C 12 Alphabetizes (15)
D 12 Alphabetizes (15)
E 9 Alphabetizes (15)

Sitting II — Wisconsin Tests of Reading Skill Development

D 13 Guide Words (15)
E 10 Guide Words (15)
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+
Wisconsin Tests of Reading Skill Development

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THE WISCONSIN DESIGN FOR READING SKILL DEVELOPMENT: STUDY SKILLS
A REPORT ON THE TYPE I FIELD TEST, 1971-1973

by Diane K. Sals and W. Donald Hubbard

Report from the Technical Services Section

Wisconsin Research and Development
Center for Cognitive Learning
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WISCONSIN RESEARCH AND DEVELOPMENT CENTER FOR COGNITIVE LEARNING

MISSION

The mission of the Wisconsin Research and Development Center for Cognitive Learning is to help learners develop as rapidly and effectively as possible their potential as human beings and as contributing members of society. The R&D Center is striving to fulfill this goal by

- conducting research to discover more about how children learn
- developing improved instructional strategies, processes and materials for school administrators, teachers, and children, and
- offering assistance to educators and citizens which will help transfer the outcomes of research and development into practice

PROGRAM

The activities of the Wisconsin R&D Center are organized around one unifying theme, Individually Guided Education.

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ABSTRACT

A field test of the precommercial version of the Study Skills element of the Wisconsin Design for Reading Skill Development, developed at the Wisconsin Research and Development Center for Cognitive Learning, was conducted in 22 schools from 1971 to 1973. Seventeen of the schools were situated in rural to suburban locations and had prior reading achievement at or above national norms. Five were located in an inner-city area and had prior reading achievement below national norms. Half of the schools had a multi-unit organization and half were organized on a self-contained basis.

The purposes of the field test were (1) to determine the effectiveness of the program in terms of student achievement, (2) to document the degree to which recommended implementation procedures were followed, (3) to determine the feasibility of the program for the elementary school, and (4) to gather information useful for revisions.

The results of the field test were as follows: (1) Consistent improvement was shown by Study Skills students on program-embedded and standardized measures. In all analyses schools with prior reading achievement below national norms showed greater improvement than schools with prior reading achievement above national norms. (2) Overall implementation was adequate but less than expected. Little relationship between adequacy of implementation and achievement was observed. (3) The program was generally well accepted, with some reservations in all cases. Schools with team organization had the most positive outlook toward the program. (4) Formative findings indicated a need to reorganize and streamline the program.

The field test demonstrated that even with the many imperfections of the precommercial version, the Study Skills program was a viable and effective addition to the elementary school curriculum. Although it had some drawbacks in terms of demands and priorities, teachers on the whole supported it because students enjoyed it and because the framework, by identifying essential skills, helped organize and evaluate instruction which in many cases was carried out previously on a casual basis, if at all.

APPENDIX F

Comparative Performance on Program-Embedded Achievement Tests of Pupils in Schools with Typical Performance below Grade Level Participating in the Map, Graph and Table Sub-areas of Study Skills Field Test, 1971-72

GRADE 2

RAW SCORE MEANS AND PERCENT MASTERS

Test B3--Picture Grid

Number of Items - 12

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	79	5.35	24.1	25	7.24	36.0	1.89	11.9
17	118	6.78	31.4	23	9.83	65.2	3.05	33.8
18	115	5.23	19.2	32	9.09	50.0	3.86	30.8
19	62	8.23	53.2	29	8.17	44.8	-.06	-8.4
20	180	8.17	40.0	30	8.63	50.0	.46	10.0
AVERAGE		6.75	33.6		8.59	49.2	1.84	15.6
RANGE LOW		5.23	19.2		7.24	36.0	-.06	-8.4
RANGE HIGH		8.23	53.2		9.83	65.2	3.86	33.8

Test B4--Measurement: Size

Number of Items - 12

School	N	Raw Score	Percent Masters	N	Raw Score	Percent Masters	Raw Score	Percent Masters
16	79	9.23	54.4	29	8.86	34.5	-.37	-19.9
17	118	9.63	58.5	29	9.66	69.0	.03	10.5
18	116	9.57	56.9	30	9.33	50.0	-.24	-6.9
19	63	9.87	63.5	30	9.80	56.7	-.07	-6.8
20	180	9.57	57.2	31	9.77	71.0	.20	13.8
AVERAGE		9.57	58.1		9.48	56.2	-.09	-1.9
RANGE LOW		9.23	54.4		8.86	34.5	-.37	-19.9
RANGE HIGH		9.87	63.5		9.80	71.0	.20	13.8

GRADE 2

RAW SCORE MEANS AND PERCENT MASTERS

Test B5--Measurement: Distance

Number of Items - 12

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	76	6.24	11.8	25	7.28	24.0	1.04	12.2
17	118	7.33	21.2	23	8.91	56.5	1.58	35.3
18	116	6.78	19.0	32	9.84	65.6	3.06	46.6
19	63	8.40	33.3	29	7.52	41.4	-.88	8.1
20	180	7.56	24.4	30	8.57	50.0	1.01	25.6
AVERAGE		7.26	21.9		8.42	47.5	1.16	25.6
RANGE LOW		6.24	11.8		7.28	24.0	-.88	8.1
RANGE HIGH		8.40	33.3		9.84	65.6	3.06	46.6

Test B6--Picture Graphs

Number of Items - 14

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	76	7.03	9.2	29	11.07	58.6	4.04	49.4
17	118	9.02	16.9	29	9.79	27.6	.77	10.7
18	115	7.57	17.3	30	7.47	6.7	-.10	-10.6
19	63	10.14	41.3	30	10.53	60.0	.39	18.7
20	180	8.52	16.1	31	10.26	45.2	1.74	29.1
AVERAGE		8.45	20.2		9.82	39.6	1.37	19.4
RANGE LOW		7.03	9.2		7.47	6.7	-.10	-10.6
RANGE HIGH		10.14	41.3		11.07	60.0	4.04	49.4

GRADE 2

RAW SCORE MEANS AND PERCENT MASTERS

Test B7--Single Column Tables

Number of Items - 15

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	78	6.28	12.9	25	8.44	36.0	2.16	23.1
17	118	7.18	13.6	23	8.13	26.1	.95	12.5
18	115	6.59	16.5	32	11.34	59.4	4.75	42.9
19	63	9.60	42.9	29	6.48	13.8	-3.12	-29.1
20	180	6.57	6.7	30	8.50	30.0	1.93	23.3
AVERAGE		7.24	18.5		8.58	33.1	1.34	14.6
RANGE LOW		6.28	12.9		6.48	13.8	-3.12	-29.1
RANGE HIGH		9.60	42.9		11.34	59.4	4.75	42.9

Test C1--Picture Symbols*

Number of Items - 12

School	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16			29	5.52	6.9		
17			29	8.72	44.8		
18			30	5.97	3.3		
19			30	8.33	53.3		
20			31	7.71	32.3		
AVERAGE				7.25	28.1		
RANGE LOW				5.52	3.3		
RANGE HIGH				8.72	53.3		

*Not tested in 1971.

GRADE 3

RAW SCORE MEANS AND PERCENT MASTERS

Test B3--Picture Grid

Number of Items - 12

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	28	8.07	50.0	26	10.31	73.1	2.24	23.1
17	27	8.56	51.9	26	10.38	80.8	1.82	28.9
18	25	9.96	64.0	29	9.86	75.9	-.10	11.9
19	27	8.22	51.9	27	9.96	74.1	1.74	22.2
20	29	8.86	62.1	30	11.33	90.0	2.47	27.9
AVERAGE		8.73	56.0		10.37	78.8	1.64	22.8
RANGE LOW		8.07	50.0		9.86	73.1	-.10	11.9
RANGE HIGH		9.96	64.0		11.33	90.0	2.47	28.9

Test B5--Measurement: Distance

Number of Items - 12

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	28	7.04	25.0	27	9.59	55.6	2.55	30.6
17	27	8.22	44.4	26	9.77	53.8	1.55	9.4
18	24	7.67	25.0	32	9.50	59.4	1.83	34.4
19	23	9.48	69.6	29	10.00	69.0	.52	-.6
20	26	10.77	76.9	30	9.83	63.3	-.94	-13.6
AVERAGE		8.64	48.2		9.74	60.2	1.10	12.0
RANGE LOW		7.04	25.0		9.50	53.8	-.94	-13.6
RANGE HIGH		10.77	76.9		10.00	69.0	2.55	34.4

GRADE 3

RAW SCORE MEANS AND PERCENT MASTERS

Test B6--Picture Graphs

Number of Items -- 14

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	28	8.29	17.9	27	10.15	37.0	1.86	19.1
17	27	9.96	29.6	26	13.19	84.6	3.23	55.0
18	24	10.33	37.5	32	11.25	59.4	.92	21.9
19	23	11.17	60.9	29	12.07	69.0	.90	8.1
20	26	10.73	38.5	30	12.07	70.0	1.34	31.5
AVERAGE		10.09	36.9		11.75	64.0	1.66	27.1
RANGE LOW		8.29	17.9		10.15	37.0	.90	8.1
RANGE HIGH		11.17	60.9		13.19	84.6	3.23	55.0

Test B7--Single Column Tables

Number of Items - 15

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	28	6.50	10.7	27	9.96	44.4	3.46	33.7
17	27	8.81	33.3	26	12.81	84.6	4.00	51.3
18	24	7.25	20.8	32	10.12	56.3	2.87	35.5
19	23	8.96	30.4	29	11.62	62.1	2.66	31.7
20	26	8.58	30.8	30	11.90	60.0	3.32	29.2
AVERAGE		8.02	25.2		11.28	61.5	3.26	36.3
RANGE LOW		6.50	10.7		9.96	44.4	2.66	29.2
RANGE HIGH		8.96	33.3		12.81	84.6	4.00	51.3

GRADE 3

RAW SCORE MEANS AND PERCENT MASTERS

Test C9--Bar Graphs

Number of Items - 12

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	28	9.29	57.1	26	8.12	53.8	-1.17	- 3.3
17	27	6.07	37.0	26	9.96	73.1	3.89	36.1
18	25	10.64	76.0	29	7.93	41.4	-2.71	-34.6
19	27	8.67	55.6	27	8.70	55.6	.03	.0
20	29	7.93	41.4	30	9.73	73.3	1.80	31.9
AVERAGE		8.52	53.4		8.89	59.4	.37	6.0
RANGE LOW		6.07	37.0		7.93	41.4	-2.71	-34.6
RANGE HIGH		10.64	76.0		9.96	73.3	3.89	36.1

Test C10--Multicolumn Tables

Number of Items - 15

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	28	10.57	46.4	26	7.46	11.5	-3.11	-34.9
17	27	6.85	11.1	26	11.00	50.0	4.15	38.9
18	25	8.92	28.0	29	9.79	31.0	.87	3.0
19	27	9.19	33.3	27	8.30	25.9	- .89	- 7.4
20	29	8.31	24.1	30	10.27	33.3	1.96	9.2
AVERAGE		8.77	28.6		9.36	30.3	.59	1.7
RANGE LOW		6.85	11.1		7.46	11.5	-3.11	-34.9
RANGE HIGH		10.57	46.4		11.00	50.0	4.15	38.9

GRADE 4

RAW SCORE MEANS AND PERCENT MASTERS

Test B5--Measurement: Distance

Number of Items - 12

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	30	9.87	70.0	27	10.44	74.1	.57	4.1
17	26	9.54	53.8	27	10.33	74.1	.79	20.3
18	28	10.11	67.9	30	10.60	80.0	.49	12.1
19	20	10.65	80.0	18	10.17	72.2	- .48	- 7.8
20	25	10.08	72.0	30	10.07	70.0	- .01	- 2.0
AVERAGE		10.05	68.7		10.32	74.1	.27	5.4
RANGE LOW		9.54	53.8		10.07	70.0	- .48	- 7.8
RANGE HIGH		10.65	80.0		10.60	80.0	.79	20.3

Test B6--Picture Graphs

Number of Items - 14

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	29	10.28	44.8	27	13.30	92.6	3.02	47.8
17	28	12.96	85.7	29	13.24	96.6	.28	10.9
18	26	11.08	46.2	30	12.90	83.3	1.82	37.1
19	21	12.81	85.7	19	13.16	94.7	.35	9.0
20	29	12.93	82.8	30	13.00	90.0	.07	7.2
AVERAGE		12.01	69.0		13.12	91.4	1.11	22.4
RANGE LOW		10.28	44.8		12.90	83.3	.07	7.2
RANGE HIGH		12.96	85.7		13.30	96.6	3.02	47.8

GRADE 4

RAW SCORE MEANS AND PERCENT MASTERS

Test C2--Semipictorial Symbols

Number of Items - 14

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	30	7.83	23.3	27	9.11	14.8	1.28	- 8.5
17	26	8.73	19.2	27	9.41	37.0	.68	17.8
18	28	7.39	14.3	30	9.50	26.7	2.11	12.4
19	20	10.10	45.0	18	9.78	33.3	- .32	-11.7
20	25	8.60	20.0	30	8.70	16.7	.10	- 3.3
AVERAGE		8.53	24.4		9.30	25.7	.77	1.3
RANGE LOW		7.39	14.3		8.70	14.8	- .32	-11.7
RANGE HIGH		10.10	45.0		9.78	37.0	2.11	17.8

Test C7--Measurement: Distance

Number of Items - 15

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	30	7.40	13.3	27	8.30	7.4	.90	- 5.9
17	26	6.81	11.5	27	8.07	11.1	1.26	- .4
18	28	7.43	3.6	30	7.53	6.7	.10	3.1
19	20	7.95	5.0	18	7.78	11.1	- .17	6.1
20	25	8.04	8.0	30	7.43	6.7	- .61	- 1.3
AVERAGE		7.53	8.3		7.82	8.6	.29	0.3
RANGE LOW		6.81	3.6		7.43	6.7	- .61	- 5.9
RANGE HIGH		8.04	13.3		8.30	11.1	1.26	6.1

GRADE 4

RAW SCORE MEANS AND PERCENT MASTERS

Test C8--Picture Graphs

Number of Items - 15

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	29	7.72	17.2	27	7.26	11.1	- .46	- 6.1
17	28	8.89	28.6	29	8.48	27.6	- .41	- 1.0
18	26	4.77	7.7	30	7.37	20.0	2.60	12.3
19	21	8.90	33.3	19	8.47	26.3	- .43	- 7.0
20	29	5.72	10.3	30	7.70	26.7	1.98	16.4
AVERAGE		7.20	19.4		7.86	22.3	.66	2.9
RANGE LOW		4.77	7.7		7.26	11.1	- .46	- 7.0
RANGE HIGH		8.90	33.3		8.48	27.6	2.60	16.4

Test C9--Bar Graphs

Number of Items - 12

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	29	6.66	37.9	27	10.33	77.8	3.67	39.9
17	28	10.21	78.6	29	10.31	82.8	.10	4.2
18	26	7.27	38.5	30	9.47	66.7	2.20	28.2
19	21	10.57	85.7	19	9.32	68.4	-1.25	-17.3
20	29	9.72	65.5	30	10.50	76.7	.78	11.2
AVERAGE		8.89	61.2		9.99	74.5	1.10	13.3
RANGE LOW		6.66	37.9		9.32	66.7	-1.25	-17.3
RANGE HIGH		10.57	85.7		10.50	82.8	3.67	39.9

GRADE 5

RAW SCORE MEANS AND PERCENT MASTERS

Test B3--Picture Grid

Number of Items - 12

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	27	9.8	66.7	27	10.85	77.8	1.04	11.1
17	25	10.84	80.0	28	10.71	82.1	- .13	2.1
18	29	9.62	65.5	30	11.10	93.3	1.48	27.8
19	28	10.96	85.7	17	11.76	100.0	.80	14.3
20	27	10.67	85.2	28	10.07	71.4	- .60	-13.8
AVERAGE		10.38	76.6		10.90	84.9	.52	8.3
RANGE LOW		9.62	65.5		10.07	71.4	- .60	-13.8
RANGE HIGH		10.96	85.7		11.76	100.0	1.48	27.8

Test C4--Street Grid

Number of Items - 12

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	27	6.78	7.4	27	8.37	37.0	1.59	29.6
17	25	7.20	28.0	28	8.32	35.7	1.12	7.7
18	29	7.00	20.7	30	6.73	20.0	- .27	- .7
19	28	7.93	28.6	17	9.65	58.8	1.72	30.2
20	27	7.48	18.5	28	8.25	42.9	.77	24.4
AVERAGE		7.27	20.6		8.26	38.9	.99	18.3
RANGE LOW		6.78	7.4		6.73	20.0	- .27	- .7
RANGE HIGH		7.93	28.6		9.65	58.8	1.72	30.2

GRADE 5

RAW SCORE MEANS AND PERCENT MASTERS

Test D3--Number-Letter Grid

Number of Items - 16

School	Fall, 1971 N	Raw Score	Percent Masters	Fall, 1972 N	Raw Score	Percent Masters	1971-72 Change Raw Score	Percent Masters
16	27	8.74	22.2	27	11.11	37.0	2.37	14.8
17	25	9.36	28.0	28	11.96	46.4	2.60	18.4
18	29	8.52	13.8	30	8.87	20.0	.35	6.2
19	28	9.71	32.1	17	12.06	41.2	2.35	9.1
20	27	8.67	14.8	28	11.11	42.9	2.44	28.1
AVERAGE		9.00	22.2		11.02	37.5	2.02	15.3
RANGE LOW		8.52	13.8		8.87	20.0	.35	6.2
RANGE HIGH		9.71	32.1		12.06	46.4	2.60	28.1

Test D4--Cardinal Directions

Number of Items - 15

School	Fall, 1971 N	Raw Score	Percent Masters	Fall, 1972 N	Raw Score	Percent Masters	1971-72 Change Raw Score	Percent Masters
16	29	7.10	20.7	26	9.96	46.2	2.86	25.5
17	26	9.04	26.9	29	8.28	27.6	- .76	.7
18	28	8.18	21.4	31	9.90	38.7	1.72	17.3
19	29	8.38	27.6	18	9.22	27.8	.84	.2
20	28	9.21	32.1	30	9.53	30.0	.32	- 2.1
AVERAGE		8.38	25.7		9.38	34.1	1.00	8.4
RANGE LOW		7.10	20.7		8.28	27.6	- .76	- 2.1
RANGE HIGH		9.21	32.1		9.96	46.2	2.86	25.5

GRADE 5

RAW SCORE MEANS AND PERCENT MASTERS

Test D6--Picture Graphs

Number of Items - 15

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	29	4.83	10.3	26	6.88	7.7	2.05	- 2.6
17	26	7.50	26.9	29	7.72	27.6	.22	.7
18	28	5.50	10.7	31	8.13	35.5	2.63	24.8
19	29	7.62	27.6	18	8.61	33.3	.99	5.7
20	28	8.00	28.6	30	8.90	30.0	.90	1.4
AVERAGE		6.69	20.8		8.05	26.8	1.36	6.0
RANGE LOW		4.83	10.3		6.88	7.7	.22	- 2.6
RANGE HIGH		8.00	28.6		8.90	35.5	2.63	24.8

Test D8--Circle Graphs

Number of Items - 12

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	29	5.24	17.2	26	5.35	15.4	.11	- 1.8
17	26	7.46	23.1	29	6.76	17.2	- .70	- 5.9
18	28	6.04	14.3	31	6.55	32.3	.51	18.0
19	29	6.83	20.7	18	7.50	33.3	.67	12.6
20	28	6.75	25.0	30	7.37	20.0	.62	- 5.0
AVERAGE		6.46	20.1		6.71	23.6	.25	3.5
RANGE LOW		5.24	14.3		5.35	15.4	- .70	- 5.9
RANGE HIGH		7.46	25.0		7.50	33.3	.67	18.0

GRADE 6

RAW SCORE MEANS AND PERCENT MASTERS

Test C2--Semipictorial Symbols

Number of Items - 14

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	22	10.36	59.1	28	12.14	67.9	1.78	8.8
17	34	11.27	67.6	26	11.73	61.5	.46	- 6.1
18	24	10.17	50.0	29	11.90	79.3	1.73	29.3
19	28	11.28	60.7	28	11.46	64.3	.18	3.6
20	32	10.88	56.3	30	12.13	76.7	1.25	20.4
AVERAGE		10.79	58.7		11.87	69.9	1.08	11.2
RANGE LOW		10.17	50.0		11.46	61.5	.18	- 6.1
RANGE HIGH		11.28	67.6		12.14	79.3	1.78	29.3

Test C9--Bar Graphs

Number of Items - 12

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	24	9.46	62.5	28	10.25	78.6	.79	16.1
17	32	9.31	68.8	24	11.17	91.7	1.86	22.9
18	25	9.12	60.0	29	9.45	69.0	.33	9.0
19		†	----		†	----	---	---
20	31	9.77	71.0	29	10.31	72.4	.54	1.4
AVERAGE		9.41	65.6		10.30	77.9	.89	12.3
RANGE LOW		9.12	60.0		9.45	69.0	.33	1.4
RANGE HIGH		9.77	71.0		11.17	91.7	1.86	22.9

†No data.

GRADE 6

RAW SCORE MEANS AND PERCENT MASTERS

Test C10--Multicolumn Tables

Number of Items - 15

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	24	11.33	62.5	26	11.69	57.7	.36	- 4.8
17	29	12.07	72.4	28	13.54	89.3	1.47	16.9
18	25	9.76	48.0	29	11.31	65.5	1.55	17.5
19		†	----	28	12.39	75.0	----	----
20	29	10.66	41.4	30	12.57	73.3	1.91	31.9
AVERAGE		10.95	56.1		12.30	72.2	1.32[a]	15.4[a]
RANGE LOW		9.76	41.4		11.31	57.7	.36	- 4.8
RANGE HIGH		12.07	72.4		13.54	89.3	1.91	31.9

†No data.

[a]Based on four, rather than five schools.

Test D1--Nonpictorial Symbols

Number of Items - 14

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	22	8.00	9.1	28	10.18	42.9	2.18	33.8
17	34	10.18	41.2	26	10.12	38.5	- .06	- 2.7
18	24	8.25	8.3	29	10.41	51.7	2.16	43.4
19	28	9.92	32.1	28	10.00	39.3	.08	7.2
20	32	10.13	40.6	30	9.93	26.7	- .20	-13.9
AVERAGE		9.29	26.3		10.13	39.8	.84	13.5
RANGE LOW		8.00	8.3		9.93	26.7	- .20	-13.9
RANGE HIGH		10.18	41.2		10.41	51.7	2.18	43.4

GRADE 6

RAW SCORE MEANS AND PERCENT MASTERS

Test D7--Bar Graphs

Number of Items - 15

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	24	9.33	33.3	28	10.14	42.9	.81	9.6
17	32	9.28	40.6	24	10.46	50.0	1.18	9.4
18	25	8.16	24.0	29	9.59	48.3	1.43	24.3
19		†	----		†	----	----	----
20	31	9.68	38.7	29	9.90	41.4	.22	2.7
AVERAGE		9.11	34.2		10.02	45.7	.91	11.5
RANGE LOW		8.16	24.0		9.59	41.4	.22	2.7
RANGE HIGH		9.68	40.6		10.46	50.0	1.43	24.3

Test D9--Multicolumn Tables

Number of Items - 15

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	24	5.33	.0	26	6.73	19.2	1.40	19.2
17	29	6.17	10.3	28	8.54	28.6	2.37	18.3
18	25	4.48	.0	29	6.76	10.3	2.28	10.3
19		†	----	28	7.64	17.9	----	----
20	29	6.00	3.4	30	6.40	10.0	.40	6.6
AVERAGE		5.49	3.4		7.21	17.2	1.61[a]	13.6[a]
RANGE LOW		4.48	.0		6.40	10.0	.40	6.6
RANGE HIGH		6.17	10.3		8.54	28.6	2.37	19.2

†No data.

[a]Based on four, rather than five schools.

GRADE 6

RAW SCORE MEANS AND PERCENT MASTERS

Test E1--Point & Line Symbols

Number of Items - 15

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	22	6.18	13.6	28	6.75	10.7	.57	- 2.9
17	34	8.18	14.7	26	6.58	7.7	-1.60	- 7.0
18	24	6.08	.0	29	7.72	13.8	1.64	13.8
19	28	6.79	14.3	28	8.39	21.4	1.60	7.1
20	32	7.06	9.4	30	6.30	6.7	- .76	- 2.7
AVERAGE		6.85	10.4		7.15	12.1	.30	1.7
RANGE LOW		6.08	.0		6.30	6.7	-1.60	- 7.0
RANGE HIGH		8.18	14.7		8.39	21.4	1.64	13.8

Test E6--Bar Graphs

Number of Items - 20

School	Fall, 1971 N	Fall, 1971 Raw Score	Fall, 1971 Percent Masters	Fall, 1972 N	Fall, 1972 Raw Score	Fall, 1972 Percent Masters	1971-72 Change Raw Score	1971-72 Change Percent Masters
16	24	7.92	.0	28	7.79	7.1	- .13	7.1
17	32	8.59	12.5	24	10.08	8.3	1.49	- 4.2
18	25	8.80	12.0	29	8.21	.0	- .59	-12.0
19		†	----		†	----	----	----
20	31	9.10	6.5	29	9.34	10.3	.24	3.8
AVERAGE		8.60	7.8		8.86	6.4	.26	- 1.4
RANGE LOW		7.92	.0		7.79	.0	- .59	-12.0
RANGE HIGH		9.10	12.5		10.08	10.3	1.49	7.1

†No data.

GRADE 6

RAW SCORE MEANS AND PERCENT MASTERS

Test E7--Multicolumn Tables

Number of Items - 20

School	Fall, 1971			Fall, 1972			1971-72 Change	
	N	Raw Score	Percent Masters	N	Raw Score	Percent Masters	Raw Score	Percent Masters
16	24	5.58	4.2	26	6.88	7.7	1.30	3.5
17	29	6.93	3.4	28	9.29	25.0	2.36	21.6
18	25	6.16	.0	29	8.41	3.4	2.25	3.4
19		†	----	28	9.18	10.7	----	----
20	29	7.31	6.9	30	6.97	6.7	- .34	- .2
AVERAGE		6.49	3.6		8.15	10.7	1.39[a]	7.1[a]
RANGE LOW		5.58	.0		6.88	3.4	- .34	- .2
RANGE HIGH		7.31	6.9		9.29	25.0	2.36	21.6

†No data.

[a]Based on four, rather than five schools.

APPENDIX G

Comparative Performance on Program-Embedded Achievement Tests of Pupils in Schools with Typical Performance at or above Grade Level Participating in the Map, Graph and Table Subareas of Study Skills Field Test, 1971-72

GRADE 2

Raw Score Means and Percent Masters

Test B3--Picture Grid
Number of Items-12

Test B5--Measurement: Distance
Number of Items-12

School	Fall 1971			Fall 1972			1971-72 Change		Fall 1971			Fall 1972			1971-72 Change	
	N	RS**	%M	N	RS	%M	RS	%M	N	RS	%M	N	RS	%M	RS	%M
1	50	10.48	80.0	30	11.20	90.0	.72	10.0	50	10.46	74.0	30	10.87	86.4	.41	12.7
2	124	8.40	54.0	29	10.28	79.3	1.88	25.3	124	9.88	67.7	29	11.03	89.7	1.15	22.0
3	20	7.05	20.0	24	8.54	54.2	1.49	34.2	20	8.90	35.0	24	9.71	70.8	.81	35.8
4	53	10.75	84.9	30	11.73	100.0	.98	15.1	53	10.02	64.2	30	11.37	100.0	1.35	35.8
6	47	10.02	70.2	30	11.23	86.7	1.21	16.5	47	9.53	61.7	30	11.27	90.0	1.74	28.3
7	120	10.45	74.2	26	10.85	84.6	.40	10.4	118	10.54	79.6	26	10.42	76.9	-.12	-2.7
8	63	11.34	90.5	29	11.03	86.2	-.31	-4.3	62	7.98	48.4	29	10.97	89.7	2.99	41.3
9	58	11.22	93.1	29	11.83	100.0	.61	6.9	58	10.55	81.0	29	11.41	93.1	.86	12.1
10		†		28	11.21	55.7	---			†		28	10.96	85.7	---	
11	73	10.92	87.7	29	11.10	89.7	.18	2.0	73	10.66	90.4	29	11.41	100.0	.75	9.6
12	57	10.44	77.2	22	11.05	86.4	.61	9.2	56	10.02	71.4	22	10.77	81.8	.75	10.4
13	71	9.44	60.6	29	10.00	72.4	.56	11.8	71	9.82	63.4	29	10.62	79.3	..80	15.9
15	40	11.17	90.0	29	11.45	96.6	.28	6.6	40	10.42	82.5	29	11.07	93.1	.65	10.6
21	131	11.24	87.0	30	11.83	100.0	.59	13.0	131	10.73	82.4	30	10.80	90.0	.07	7.6
22	61	10.51	85.2	30	11.33	93.3	.82	8.1	61	10.23	70.5	30	10.80	90.0	.57	19.5
23	51	11.22	90.2	27	9.78	74.1	-1.44	-16.1	51	10.92	84.3	27	9.93	70.4	-.99	-13.9
32	57	11.40	93.0	30	10.20	76.7	-1.20	-16.3	57	10.56	78.9	30	10.63	76.7	.07	-2.2
AVERAGE*		10.38	77.4		10.86	85.6	.46	8.3		10.08	71.0		10.83	86.1	.74	15.2
RANGE LOW		7.05	20.0		8.54	54.2	-1.44	-16.3		7.98	35.0		9.71	70.4	-.99	-13.9
RANGE HIGH		11.40	93.1		11.83	100.0	1.88	34.2		10.92	90.4		11.41	100.0	2.99	41.3

†No data

*Based on number of entries above

**Raw Scores

GRADE 2

Raw Score Means and Percent Masters

Test B7--Single Column Tables

Number of Items-15

School	Fall 1971 N	Fall 1971 RS	Fall 1971 %M	Fall 1972 N	Fall 1972 RS	Fall 1972 %M	1971-72 Change RS	1971-72 Change %M
1	50	10.96	58.0	30	11.50	66.7	.54	8.7
2	124	10.32	47.6	29	10.31	51.7	-.01	4.1
3	20	8.35	30.0	24	9.17	33.3	.82	3.3
4	53	10.68	58.5	30	11.63	70.0	.95	11.5
6	46	10.56	43.5	30	13.10	83.3	2.54	39.8
7	120	11.83	67.5	26	12.35	73.1	.52	5.6
8	65	12.38	70.8	29	12.34	72.4	-.04	1.6
9	58	11.59	58.6	29	13.10	86.2	1.51	27.6
10		†		28	11.25	57.1	---	
11	73	12.92	83.6	29	11.72	58.6	-1.20	-25.0
12	57	10.37	52.6	22	11.95	77.3	1.58	24.7
13	71	10.93	54.9	29	11.41	58.6	.48	3.7
15	40	12.12	67.5	29	11.38	62.1	-.74	-5.4
21	131	12.92	80.2	30	11.97	70.0	-.95	-10.2
22	61	10.18	45.9	30	13.97	86.7	3.79	40.8
23	51	11.80	62.7	27	7.67	22.2	-4.13	-40.5
32	57	12.72	77.2	30	11.83	70.0	-.89	-7.2
AVERAGE*		11.29	59.9		11.57	64.7	.30	5.2
RANGE LOW		8.35	30.0		7.67	22.2	-4.13	-40.5
RANGE HIGH		12.92	80.2		13.97	86.7	3.79	40.8

†No data.

*Based on number of entries above.

GRADE 3

Raw Score Means and Percent Masters

Test C2--Semipictorial Symbols

Number of Items - 14

Test C4--Street Grid

Number of Items - 12

School	Fall 1971			Fall 1972			1971-72 Change		Fall 1971			Fall 1972			1971-72 Change	
	N	RS**	%M	N	RS	%M	RS	%M	N	RS	%M	N	RS	%M	RS	%M
1	65	10.83	56.9	30	12.50	86.7	1.67	29.8	65	7.94	36.9	30	9.73	60.0	1.79	23.1
2	62	9.90	40.3	27	10.15	48.1	.25	7.8	62	8.06	38.7	27	7.93	44.4	-.13	5.7
3	25	11.80	72.0	17	9.59	35.3	-2.21	-36.7	25	7.96	28.0	17	7.35	29.4	-.61	1.4
4	49	11.63	59.2	27	11.59	63.0	-.04	3.8	49	9.29	61.2	27	9.26	51.9	-.03	-9.3
6	42	10.40	47.6	20	9.60	40.0	-.80	-7.6	42	8.10	42.9	20	8.15	45.0	.05	2.1
7	143	11.75	72.0	30	11.93	63.3	.18	-8.7	144	9.57	64.6	30	9.03	50.0	-.54	-14.6
8	62	11.89	66.1	29	10.66	44.8	-1.23	-21.3	62	9.40	53.2	29	8.93	44.8	-.47	-8.4
9	69	12.39	76.8	31	12.13	71.0	-.26	-5.8	69	9.75	69.6	31	10.23	67.7	.48	-1.9
10		†		27	11.81	70.4	---			†		27	9.15	51.9	---	
11	49	12.71	79.6	28	12.14	75.0	-.57	-4.6	49	9.59	59.2	28	10.14	71.4	.55	12.2
12	58	10.67	48.3	29	12.10	69.0	1.43	20.7	58	8.78	48.3	29	9.07	34.5	.29	-13.8
13	104	11.26	61.5	29	10.48	51.7	-.78	-9.8	104	8.94	51.9	29	9.34	51.7	.40	-0.2
15	40	11.70	67.5	20	12.35	75.0	.65	7.5	40	9.15	50.0	20	9.30	50.0	.15	0.0
21	171	11.96	66.1	30	12.60	80.0	.64	13.9	171	9.37	53.2	30	9.27	56.7	-.10	3.5
22	54	11.84	70.4	29	11.48	55.2	-.36	-15.2	54	9.10	48.2	29	8.55	37.9	-.55	-10.3
23	52	12.27	80.8	30	11.03	56.7	-1.24	-24.1	52	10.06	67.3	30	7.20	36.7	-2.86	-30.6
32	41	12.15	80.5	33	12.52	78.8	.37	-1.7	41	9.61	56.1	33	9.85	69.7	.24	13.6
AVERAGE*		11.57	65.4		11.45	62.6	-.14	-3.3		9.04	51.8		8.97	50.2	-.08	-1.7
RANGE LOW		9.90	40.3		9.59	35.3	-2.21	-36.7		7.94	28.0		7.20	29.4	-2.86	-30.6
RANGE HIGH		12.71	80.8		12.60	86.7	1.67	29.8		10.06	69.6		10.23	71.4	1.79	23.1

†No data

*Based on number of entries above

**Raw Scores

GRADE 4

Raw Score Means and Percent Masters

Test C4--Street Grid

Number of Items-12

Test C7--Measurement: Distance

Number of Items-15

School	Fall 1971			Fall 1972			1971-72 Change		Fall 1971			Fall 1972			1971-72 Change	
	N	RS**	%M	N	RS	%M	RS	%M	N	RS	%M	N	RS	%M	RS	%M
1	20	10.20	65.0	21	11.71	100.0	1.51	35.0	22	12.55	72.7	21	12.86	71.4	.32	-1.3
2	31	8.71	45.2	28	9.82	64.3	1.11	19.1	31	11.19	65.2	28	11.32	57.1	.13	11.9
3		†			†		---			†			†		---	
4	19	10.32	57.9	27	10.00	70.4	-.32	12.5		†		27	11.85	70.4	---	
6		†		25	9.72	60.0	---		18	11.67	66.7	25	10.40	32.0	-1.27	-34.7
7	24	10.25	79.2	30	10.30	73.3	.05	-5.9	23	10.65	30.4	30	11.63	50.0	.98	19.6
8	19	8.00	42.1	25	11.00	84.0	3.00	41.9	18	11.22	50.0	25	12.60	72.0	1.38	22.0
9	19	10.84	84.2	29	10.48	82.8	-.36	-1.4	16	11.00	37.5	29	12.38	69.0	1.38	31.5
10	27	10.07	70.4	29	9.59	55.2	-.48	-15.2	27	11.18	44.4	29	11.34	51.7	.16	7.3
11	20	9.30	60.0	26	11.15	88.5	1.85	28.5	21	11.86	57.1	26	12.35	76.9	.49	19.8
12	21	10.33	76.2	25	10.32	76.0	-.01	-0.2	22	10.73	45.5	25	12.00	72.0	1.27	26.5
13	29	10.59	79.3	27	10.52	77.8	-.07	-1.5	29	11.52	65.5	27	11.67	74.1	.15	8.6
15		†		29	10.28	75.9	---			†		29	10.59	55.2	---	
21	30	10.37	73.3	30	10.33	76.7	-.04	3.4	29	11.10	44.8	30	11.43	53.3	.33	8.5
22	22	9.41	59.1	20	10.85	90.0	1.44	30.9		†		20	11.95	70.0	---	
23	19	10.90	78.9	16	10.87	93.8	-.03	14.9	19	11.26	52.6	16	13.31	81.3	2.05	28.7
32	31	10.84	83.9	24	10.96	87.5	.12	3.6	31	11.94	67.7	24	13.08	75.0	1.14	7.3
AVERAGE*		10.01	68.2		10.49	78.5	.55	11.8		11.37	52.3		11.92	64.5	.65	12.0
RANGE LOW		8.00	42.1		9.59	55.2	-.48	-15.2		10.65	30.4		10.40	32.0	-1.27	-34.7
RANGE HIGH		10.90	84.2		11.71	100.0	3.00	41.9		12.54	72.7		13.31	81.3	2.05	31.5

†No data
*Based on number of entries above
**Raw Scores

GRADE 4

Raw Score Means and Percent Masters

Test C8--Picture Graphs — Number of Items-15

Test D3--Number-Letter Grid — Number of Items-16

School	Fall 1971			Fall 1972			1971-72 Change		Fall 1971			Fall 1972			1971-72 Change	
	N	RS**	%M	N	RS	%M	RS	%M	N	RS	%M	N	RS	%M	RS	%M
1		†		22	12.59	77.3	---		20	13.20	65.0	21	13.95	85.7	.75	20.7
2	30	10.80	53.3	29	12.14	72.4	1.34	19.1	31	11.97	48.4	28	11.79	46.4	-.18	-2.0
3	19	8.74	42.1	22	10.77	54.5	2.03	12.4		†			†		---	
4	18	12.33	83.3	22	12.36	68.2	.03	-15.1	19	12.53	57.9	27	12.81	63.0	.28	5.1
6		†		17	10.59	47.1	---			†		25	11.00	28.0	---	
7	25	11.00	48.0	26	11.19	65.4	.19	17.4	24	13.04	62.5	30	12.20	53.3	-.84	-9.2
8	18	10.28	44.4	22	11.23	72.7	.95	28.3	19	12.00	42.1	25	13.64	76.0	1.64	33.9
9	21	10.00	23.8	29	11.41	62.1	1.41	38.3	19	12.90	68.4	29	14.00	79.3	1.10	10.9
10	28	10.68	50.0	29	12.34	75.0	1.66	25.0	24	13.59	70.4	29	11.97	48.3	-1.62	-22.1
11	20	9.90	25.0	26	13.69	88.5	3.79	63.5	20	12.50	45.0	26	12.58	57.7	.08	12.7
12		†		23	10.52	56.5	---		21	12.00	57.1	25	12.24	52.0	.24	-5.1
13	28	10.64	53.6	30	10.30	56.7	-.34	3.1	29	12.69	55.2	27	12.33	55.6	-.36	0.4
15	21	11.33	57.1	28	10.54	60.7	-.79	3.6		†		29	12.14	62.1	---	
21	28	10.79	50.0	26	12.73	73.1	1.94	23.1	30	13.60	73.3	30	12.10	46.7	-1.50	-26.6
22	22	10.09	40.9	21	12.05	76.2	1.96	35.3	22	13.41	77.3	20	12.65	55.0	-.76	-22.0
23		†		15	11.47	66.7	---		19	13.16	73.7	16	14.44	87.5	1.28	13.8
32	31	13.06	80.6	25	13.08	80.0	.02	-0.6	31	14.06	90.3	24	13.87	79.2	-.19	-11.1
AVERAGE*		10.74	50.2		11.71	67.8	1.09	19.5		12.90	63.3		12.73	61.0	-.01	0.0
RANGE LOW		8.74	23.8		10.30	47.1	-.79	-15.1		11.97	42.1		11.00	28.0	-1.62	-26.6
RANGE HIGH		13.06	83.3		13.69	88.5	3.79	63.5		14.06	90.3		14.44	87.5	1.64	33.9

†No data
*Based on number of entries above
**Raw Scores

GRADE 4

Raw Score Means and Percent Masters

Test D5--Scale: Whole Units

Number of Items-13

Test D6--Picture Graphs

Number of Items-15

School	Fall 1971			Fall 1972			1971-72 Change		Fall 1971			Fall 1972			1971-72 Change	
	N	RS**	%M	N	RS	%M	RS	%M	N	RS	%M	N	RS	%M	RS	%M
1	22	7.68	18.2	22	8.68	31.8	1.00	13.6		†		22	11.86	72.7	---	
2	31	7.42	16.1	29	7.66	34.5	.24	18.4	30	10.77	60.0	29	11.93	62.1	1.16	2.1
3		†		22	7.68	22.7	---		19	10.26	47.4	22	11.36	54.5	1.10	7.1
4		†		22	9.18	45.5	---		18	13.56	88.9	22	12.91	81.8	-.65	-7.1
6	18	6.50	5.6	17	7.94	35.3	1.44	29.7		†		17	11.94	64.7	---	
7	23	6.96	26.1	26	8.65	26.9	1.69	0.8	25	11.72	68.0	26	11.69	69.2	-.03	1.2
8	18	8.72	27.5	22	9.95	54.5	1.23	26.7	18	11.78	66.7	22	12.00	63.6	.22	-3.1
9	16	8.88	25.0	29	8.45	37.9	-.43	12.9	21	11.10	61.9	29	12.21	72.4	1.11	10.5
10	27	9.00	40.7	29	10.21	48.3	1.21	7.6	28	11.50	75.0	29	12.31	72.4	.81	-2.6
11	21	8.52	33.3	26	10.85	73.1	2.33	39.8	20	11.95	80.0	26	13.42	84.6	1.47	4.6
12	22	7.36	27.3	23	6.87	17.4	-.49	-9.9		†		23	10.09	56.5	---	
13	29	8.93	37.9	30	8.47	33.3	-.46	-4.6	28	11.86	71.4	30	10.07	53.3	-1.79	-18.1
15		†		28	8.07	32.1	---		21	10.52	61.9	28	10.43	53.6	-.09	-8.3
21	29	8.00	31.0	26	10.38	46.2	2.38	15.2	28	10.75	42.9	26	12.46	65.4	1.71	22.5
22		†		21	8.90	42.9	---		22	10.18	59.1	21	11.86	76.2	1.68	17.1
23	19	7.63	26.3	15	8.60	46.7	.97	20.4		†		15	12.13	80.0	---	
32	31	10.13	54.8	25	9.92	52.0	-.21	-2.8	31	13.45	90.3	25	12.92	88.0	-.53	-2.3
AVERAGE*		8.13	28.5		8.85	40.1	.84	12.9		11.49	67.2		11.86	68.9	.47	1.5
RANGE LOW		6.50	5.6		6.87	17.4	-.49	-9.9		10.18	42.9		10.07	53.3	-1.79	-18.1
RANGE HIGH		10.13	54.8		10.85	73.1	2.38	39.8		13.56	90.3		13.42	88.0	1.71	22.5

†No data
*Based on number of entries above
**Raw Scores

GRADE 5

Raw Score Means and Percent Masters

Test C10--Multicolumn Tables

Number of Items-15

School	Fall 1971			Fall 1972			1971-72 Change	
	N	RS**	%M	N	RS	%M	RS	%M
1	30	13.87	96.7	22	14.05	100.0	.18	3.3
2	29	13.34	82.8	30	14.43	96.7	1.09	13.9
3	29	13.41	82.8	23	14.09	100.0	.68	17.2
4	36	13.14	86.1	20	14.45	100.0	1.31	13.9
6	22	13.50	90.9	24	13.33	83.3	-.17	-7.6
7	30	13.40	86.7	29	13.55	89.7	.15	3.0
8	26	12.69	84.6	28	13.68	96.4	.99	11.8
9	34	13.11	86.5	29	13.83	93.1	.72	6.6
10	32	14.03	96.9	28	14.18	96.4	.15	-0.5
11	30	13.80	90.0	30	14.03	93.3	.23	3.3
12	28	12.89	85.7	23	12.26	73.9	-.63	-11.8
13	28	13.36	92.9	28	13.68	85.7	.32	-7.2
15	20	14.25	100.0	25	13.32	84.0	-.93	-16.0
21	28	12.39	78.6	30	13.50	93.3	1.11	14.7
22	29	12.89	79.3	24	13.83	95.8	.94	16.5
23	31	13.68	93.5	25	13.72	88.0	.04	-5.5
32	25	14.04	96.0	30	14.40	100.0	.36	4.0
AVERAGE*	13	40	88.8		13.78	92.3	.38	3.5
RANGE LOW	2.39		78.6		12.26	73.9	-.93	-16.0
RANGE HIGH	4.25		100.0		14.45	100.0	1.31	17.2

Test D4--Cardinal Directions

Number of Items-15

School	Fall 1971			Fall 1972			1971-72 Change	
	N	RS	%M	N	RS	%M	RS	%M
1	74	12.39	73.0	22	13.32	86.4	.93	13.4
2	107	11.76	65.4	29	12.07	69.0	.31	3.6
3	26	11.35	57.7		†		---	
4	60	12.97	83.3	19	12.47	68.4	-.50	-14.9
6	47	12.41	66.0		†		---	
7	169	13.21	85.8	6	13.38	88.5	.17	2.7
8	93	11.66	57.0	29	12.62	79.3	.96	22.3
9	82	13.09	80.5	30	13.27	86.7	.18	6.2
10	133	13.52	87.2	27	13.44	92.6	-.08	5.4
11		†		29	13.14	89.7	---	
12	57	12.40	68.4	5	12.28	68.0	-.12	-0.4
13	95	12.78	78.9	29	13.83	93.1	1.05	14.2
15	39	12.87	74.4		†		---	
21	179	12.47	73.7	29	12.55	82.8	.08	9.1
22	68	11.94		25	12.68	72.0	.74	
23	59	12.80	79.7		†		---	
32	51	13.49	90.2	15	12.53	73.3	-.96	-16.9
AVERAGE*		12.57	74.7		12.89	80.8	.23	4.1
RANGE LOW		11.35	57.0		12.07	68.0	-.96	-16.9
RANGE HIGH		13.52	90.2		13.83	93.1	1.05	22.3

†No data
*Based on number of entries above
**Raw Scores

GRADE 5

Raw Score Means and Percent Masters

Test D5--Scale: Whole Units

Number of Items-13

Test D6--Picture Graphs

Number of Items-15

School	Fall 1971			Fall 1972			1971-72 Change		Fall 1971			Fall 1972			1971-72 Change	
	N	RS**	%M	N	RS	%M	RS	%M	N	RS	%M	N	RS	%M	RS	%M
1	74	10.20	52.7	22	10.64	72.7	.44	20.0	74	12.34	73.0	22	12.18	77.3	-.16	4.3
2	107	9.64	49.5	29	9.38	48.3	-.26	-1.2	107	12.20	72.9	29	11.24	58.6	-.96	-14.3
3	26	10.69	61.5		†		---		26	12.42	76.9		†		---	
4	60	10.45	56.7	19	10.47	52.6	.02	-4.1	60	13.12	86.7	19	12.63	84.2	-.49	-2.5
6	47	9.35	43.8		†		---		47	11.58	70.8		†		---	
7	169	10.18	56.8	26	9.92	61.5	-.26	4.7	167	12.72	79.6	26	12.81	73.1	.09	-6.5
8	93	8.69	30.1	29	10.00	51.7	1.31	21.6	93	11.41	64.5	29	12.31	75.9	.90	11.4
9	82	10.18	53.7	30	10.27	53.3	.09	-0.4	82	12.80	81.7	30	13.07	86.7	.27	5.0
10	133	10.21	57.9	27	9.48	44.4	-.73	-13.5	133	13.26	88.9	27	13.63	92.6	.37	3.9
11		†		29	10.79	69.0	---			†		29	13.28	93.1	---	
12	57	9.42	43.9	25	9.44	56.0	.02	12.1	57	11.79	70.2	25	11.60	68.0	-.19	-2.2
13	95	9.93	50.5	29	11.17	65.5	1.24	15.0	95	12.45	75.8	29	13.48	89.7	1.03	13.9
15	39	10.21	53.8		†		---		39	12.64	84.6		†		---	
21	179	9.70	46.4	29	9.28	44.8	-.42	-1.6	179	11.74	68.7	29	12.14	69.0	.40	0.3
22	68	8.48	†	25	9.68	40.0	1.20		68	12.03	†	25	10.88	52.0	-1.15	
23	59	10.12	54.6		†		---		59	12.83	81.4		†		---	
32	51	11.24	72.5	15	10.13	40.0	-1.11	-32.5	51	13.71	92.2	15	12.73	86.7	-.98	-5.5
AVERAGE*		9.91	52.5		10.05	53.8	.12	1.8		12.44	72.2		12.46	71.9	-.07	0.7
RANGE LOW		8.48	30.1		9.28	40.0	-1.11	-32.5		11.41	64.5		10.88	52.0	-1.15	-14.3
RANGE HIGH		11.24	72.5		11.17	72.7	1.31	21.6		13.71	92.2		13.63	93.1	1.03	13.9

†No data
*Based on number of entries above
**Raw Scores

GRADE 5

Raw Score Means and Percent Masters

Test D9--Multicolumn Tables — Number of Items-15

School	Fall 1971			Fall 1972			1971-72 Change	
	N	RS**	%M	N	RS	%M	RS	%M
1	30	8.93	30.0	22	11.32	54.5	2.39	24.5
2	29	9.00	37.9	30	9.87	40.0	.87	2.1
3	29	9.45	41.4	23	12.35	69.6	2.90	28.2
4	36	7.83	19.4	20	12.80	85.0	4.97	65.6
6	22	8.68	13.6	24	7.25	12.5	-1.43	-1.1
7	30	8.17	16.7	29	11.00	58.6	2.83	41.9
8	26	5.69	0.0	28	8.71	25.0	3.02	25.0
9	37	7.19	5.4	29	10.48	48.3	3.29	42.9
10	32	9.66	25.0	28	10.79	53.6	1.13	28.6
11	30	10.03	36.7	30	8.17	20.0	-1.86	-16.7
12	28	8.46	28.6	23	8.26	34.8	-.20	6.2
13	28	8.96	32.1	28	10.61	57.1	1.65	25.0
15	20	10.50	45.0	25	9.80	48.0	-.70	3.0
21	28	7.36	14.3	30	10.10	43.3	2.74	29.0
22	29	6.69	10.3	24	8.62	20.8	1.93	10.5
23	31	9.94	29.0	25	11.16	56.0	1.22	27.0
32	25	9.28	36.0	30	12.23	70.0	2.95	34.0
AVERAGE*		8.58	24.8		10.21	46.9	1.63	22.1
RANGE LOW		5.69	0.0		7.25		-1.86	-16.7
RANGE HIGH		10.50	45.0		12.80		4.97	65.6

Test E7--Multicolumn Tables — Number of Items-20

School	Fall 1971			Fall 1972			1971-72 Change	
	N	RS	%M	N	RS	%M	RS	%M
1	30	12.10	33.3	22	14.45	40.9	2.35	7.6
2	29	11.00	20.7	30	13.17	36.7	2.17	16.0
3	29	10.00	20.7	23	14.00	52.2	4.00	31.5
4	36	11.25	30.6	20	15.70	65.0	4.45	34.4
6	22	11.27	27.3	24	9.96	16.7	-1.31	-10.6
7	30	12.20	40.0	29	14.69	55.2	2.49	15.2
8	†			28	12.11	28.6	---	
9	37	11.78	27.0	29	12.45	31.0	.67	4.0
10	32	13.31	43.8	28	13.39	42.9	.08	-0.9
11	30	13.57	40.0	30	12.07	23.3	-1.50	-16.7
12	28	10.64	25.0	23	8.52	13.0	-2.12	-12.0
13	28	11.18	21.4	28	13.25	39.3	2.07	17.9
15	20	13.85	40.0	25	12.00	40.0	-1.85	0.0
21	28	9.93	21.4	30	13.83	40.0	3.90	18.6
22	29	10.07	13.8	24	12.75	37.5	2.68	23.7
23	31	13.90	45.2	25	14.76	56.0	.86	10.8
32	25	14.12	40.0	30	15.93	73.3	1.81	33.3
AVERAGE*		11.88	30.6		13.12	40.7	1.30	10.8
RANGE LOW		9.93	20.7		8.52	13.0	-2.12	-16.7
RANGE HIGH		14.12	45.2		15.93	73.3	4.45	34.4

†No data
*Based on number of entries above
**Raw Scores

GRADE 6

Raw Score Means and Percent Masters

Test D1--Nonpictorial Symbols — Number of Items-14

Test D5--Scale: Whole Units — Number of Items-13

School	Fall 1971			Fall 1972			1971-72 Change		Fall 1971			Fall 1972			1971-72 Change	
	N	RS**	%M	N	RS	%M	RS	%M	N	RS	%M	N	RS	%M	RS	%M
1	22	12.82	86.4	28	13.00	85.7	.18	-0.7		†			†		---	
2	31	12.13	74.2	33	13.00	90.9	.87	16.7	34	9.97	50.0	31	11.16	71.0	1.19	21.0
3		†			†		---		20	10.35	50.0	30	12.00	86.7	1.65	36.7
4	19	12.42	84.2	17	13.53	100.0	1.11	15.8	18	10.61	55.6	19	10.79	68.4	.18	12.8
6		†			†		---			†			†		---	
7	25	12.16	68.0	28	12.39	78.6	.23	10.6	28	7.14	21.4	27	10.59	55.6	3.45	34.2
8	21	12.14	71.4	24	12.75	87.5	.61	16.1	20	11.10	70.0	23	10.35	52.2	-.75	-17.8
9	16	12.56	75.0	21	12.67	85.7	.11	10.7		†			†		---	
10	28	12.14	82.1	29	12.83	89.7	.69	7.6	29	10.07	51.7	26	11.85	80.8	1.78	29.1
11	23	12.87	87.0	23	13.35	91.3	.48	4.3	24	10.17	58.3	21	11.19	66.7	1.02	8.4
12	16	12.38	75.0	20	13.05	90.0	.67	15.0		†			†		---	
13	25	12.44	80.0	21	12.33	81.0	-.11	1.0	26	11.35	73.1	23	10.96	69.6	-.39	-3.5
15		†			†		---		18	11.78	83.3	24	11.92	87.5	.14	4.2
21	29	11.59	82.1	30	11.50	73.3	-.09	11.2	30	9.93	63.3	29	10.52	62.1	.59	-1.2
22		†			†		---			†			†		---	
23		†			†		---			†			†		---	
32	26	12.73	76.9	26	12.85	80.8	.12	3.9	25	11.48	76.0	20	11.15	75.0	-.33	-1.0
AVERAGE*		12.36	76.9		12.77	86.2	.41	9.4		10.36	59.3		11.13	70.5	.77	11.2
RANGE LOW		11.59	62.1		11.50	73.3	-.11	-0.7		7.14	21.4		10.35	52.2	-.75	-17.8
RANGE HIGH		12.87	87.0		13.53	100.0	1.11	16.7		11.78	83.3		12.00	87.5	3.45	36.7

†No data
*Based on number of entries above
**Raw Scores

GRADE 6

Raw Score Means and Percent Masters

Test E1--Point & Line Symbols

Number of Items-15

Test E4--Scale: Multiple Whole Units

Number of Items-12

School	Fall 1971			Fall 1972			1971-72 Change		Fall 1971			Fall 1972			1971-72 Change	
	N	RS**	%M	N	RS	%M	RS	%M	N	RS	%M	N	RS	%M	RS	%M
1	22	12.59	81.8	28	12.36	75.0	-.23	-6.8		†			†		---	
2	31	11.74	58.1	33	12.36	69.7	.62	11.6	34	5.91	23.5	31	8.52	48.4	2.61	24.9
3		†			†		---		20	7.80	45.0	30	9.30	66.7	1.50	21.7
4	19	12.10	68.4	17	13.18	82.4	1.08	14.0	18	8.00	49.9	19	7.79	36.8	-.21	-7.6
6		†			†		---			†			†		---	
7	25	12.12	64.0	28	10.86	46.4	-1.26	-17.6	28	8.14	46.4	27	7.19	29.6	-.95	-16.8
8	21	11.05	57.1	24	11.37	54.2	.32	-2.9	20	7.85	35.0	23	6.61	21.7	-1.24	-13.3
9	16	12.62	68.8	21	11.48	61.9	-1.14	-6.9		†			†		---	
10	28	11.68	53.6	29	13.17	89.7	1.49	36.1	29	7.28	27.6	26	9.81	76.9	2.53	49.3
11	23	12.04	69.6	23	12.30	69.6	.26	0.0	29	6.83	25.0	21	8.48	52.4	1.65	27.4
12	16	11.75	68.8	20	11.70	65.0	-.05	-3.8		†			†		---	
13	25	11.80	64.0	21	11.71	76.2	-.09	12.2	26	8.27	53.8	23	8.48	43.5	.21	-10.3
15		†			†		---		18	7.94	44.4	24	9.08	41.7	1.14	-2.7
21	29	11.24	58.6	30	11.93	70.0	.69	11.4	30	7.93	46.7	29	6.86	34.5	-1.07	-12.2
22		†			†		---			†			†		---	
23		†			†		---			†			†		---	
32	26	12.27	76.9	26	12.62	88.5	.35	11.6	25	7.56	44.0	20	9.55	60.0	1.99	16.0
AVERAGE*		11.92	65.8		12.09	70.7	.17	4.9		7.59	39.6		8.33	46.6	.74	6.9
RANGE LOW		11.05	57.1		10.86	46.4	-1.26	-17.6		5.91	23.5		6.61	21.7	-1.24	-16.8
RANGE HIGH		12.62	81.8		13.18	89.7	1.49	36.1		8.27	53.8		9.81	76.9	2.61	49.3

†No data
*Based on number of entries above
**Raw Scores

GRADE 6

Raw Score Means and Percent Masters

Test E6--Bar Graphs — Number of Items-20

Test F1--Point, Line, Area Symbols — Number of Items-15

School	Fall 1971			Fall 1972			1971-72 Change		Fall 1971			Fall 1972			1971-72 Change	
	N	RS**	%M	N	RS	%M	RS	%M	N	RS	%M	N	RS	%M	RS	%M
1	24	16.67	79.2	28	17.00	78.6	.33	-0.6	22	10.59	40.9	28	9.61	32.1	-.98	-8.8
2	33	15.36	57.6	32	14.31	43.8	-1.05	-13.8	31	8.22	19.4	33	9.06	24.2	.84	4.8
3		†			†		---			†			†		---	
4		†			†		---		19	9.42	47.4	17	11.76	64.7	2.34	17.3
6		†		26	14.42	34.6	---			†			†		---	
7	25	16.28	72.0	29	15.28	62.1	-1.00	-9.9	25	9.84	36.0	28	8.39	25.0	-1.45	-11.0
8	21	16.52	71.4	23	15.52	56.5	-1.00	-14.9	21	8.90	19.0	24	8.54	16.7	-.36	-2.3
9	17	16.12	52.9	20	15.50	60.0	-.62	7.1	16	9.00	25.0	21	8.14	4.8	-.86	-20.2
10	27	15.11	59.3	28	17.50	85.7	2.39	26.4	28	8.07	17.9	29	10.21	41.4	2.14	23.5
11	24	15.29	54.2	22	18.05	86.4	2.76	32.2	23	8.87	30.4	23	11.04	60.9	2.17	30.5
12	19	15.84	63.2	24	12.79	45.8	-3.05	-17.4	16	9.25	31.3	20	8.40	20.0	-.85	-11.3
13	26	17.35	76.9	24	17.17	79.2	-.18	2.3	25	8.84	28.0	21	9.90	42.9	1.06	14.9
15		†			†		---			†			†		---	
21	29	14.93	34.5	27	13.89	44.4	-1.04	9.9	29	8.03	27.6	30	8.47	23.3	.44	-4.3
22		†			†		---			†			†		---	
23		†			†		---			†			†		---	
32	24	17.12	75.0	28	16.32	60.7	-.80	-14.3	26	9.73	42.3	26	9.50	34.6	-.23	-7.7
AVERAGE*		16.05	63.3		15.65	61.5	-.30	0.6		9.06	30.4		9.42	32.6	.36	2.1
RANGE LOW		14.93	34.5		12.79	34.6	-3.05	-17.4		8.03	17.9		8.14	4.8	-1.45	-20.2
RANGE HIGH		17.35	79.2		18.05	86.4	2.76	32.2		10.59	47.4		11.76	64.7	2.34	30.5

No data
*Based on number of entries above
**Raw Scores

GRADE 6

Raw Score Means and Percent Masters

Test F4—Scale: Fractional Units

Number of Items-16

Test F5--Bar Graphs

Number of Items-18

School	Fall 1971			Fall 1972			1971-72 Change		Fall 1971			Fall 1972			1971-72 Change	
	N	RS**	%M	N	RS	%M	RS	%M	N	RS	%M	N	RS	%M	RS	%M
1		†			†		---		24	13.50	45.8	28	14.61	67.9	1.11	22.1
2	34	5.97	8.8	31	6.71	3.2	.74	-5.6	33	13.46	36.4	32	12.03	28.1	-1.43	-8.3
3	20	6.70	5.0	30	8.80	20.0	2.10	15.0		†			†		---	
4	18	6.00	0.0	19	6.21	5.3	.21	5.3		†			†		---	
6		†			†		---			†		26	12.73	34.6	---	
7	28	6.61	10.7	27	5.26	7.4	-1.35	-3.3	25	13.40	48.0	29	12.72	44.8	-.68	-3.2
8	20	5.45	0.0	23	5.96	17.4	.51	17.4	21	13.43	38.1	23	13.00	30.4	-.43	-7.7
9		†			†		---		17	13.59	41.2	20	12.80	30.0	-.79	-11.2
10	29	5.52	10.3	26	8.00	26.9	2.48	16.6	27	12.63	25.9	28	13.57	28.6	.94	2.7
11	24	5.62	4.2	21	8.00	19.0	2.38	14.8	24	12.96	33.3	22	14.95	54.5	1.99	21.2
12		†			†		---		19	13.68	42.1	24	9.75	16.7	-3.93	-25.4
13	26	7.38	19.2	23	7.13	8.7	-.25	-10.5	26	14.69	65.4	24	13.67	58.3	-1.02	-7.1
15	18	7.89	22.2	24	7.54	16.7	-.35	-5.5		†			†		---	
21	30	6.17	6.7	29	6.21	6.9	.04	0.2	29	13.24	34.5	27	12.04	29.6	-1.20	-4.9
22		†			†		---			†			†		---	
23		†			†		---			†			†		---	
32	25	5.72	4.0	20	6.70	10.0	.98	6.0	24	13.92	58.3	28	13.00	32.1	-.92	-26.2
AVERAGE*		6.27	8.28		6.96	12.86	.69	4.6		13.50	42.64		12.91	41.42	-.58	-4.36
RANGE LOW		5.45	0.0		5.26	3.2	-1.35	-10.5		12.63	25.9		9.75	16.7	-3.93	-26.2
RANGE HIGH		7.89	22.2		8.80	26.9	2.48	17.4		14.69	65.4		14.95	67.9	1.99	22.1

†No data

*Based on number of entries above

**Raw Scores

APPENDIX H

Comparative Performance on Program-Embedded Achievement Tests of Pupils in Schools with Typical Performance below Grade Level Participating in the Reference Skills Subarea of Study Skills Field Test, 1972-73

GRADE 1

RAW SCORE MEANS AND PERCENT MASTERS

Test B11--Letters & Digits

Number of Items - 16

School	Spring, 1972 N	Spring, 1972 Raw Score	Spring, 1972 Percent Masters	Spring, 1973 N	Spring, 1973 Raw Score	Spring, 1973 Percent Masters	1972-73 Change Raw Score	1972-73 Change Percent Masters
16	27	12.89	66.7	26	13.50	73.1	.61	6.4
17	26	13.31	76.9	26	13.42	73.1	.11	- 3.8
18	25	13.44	72.0	30	13.27	76.7	- .17	4.7
19	29	13.10	69.0	29	14.17	89.7	1.07	20.7
20	28	12.89	67.9	30	12.70	60.0	- .19	- 7.9
AVERAGE		13.13	70.5		13.41	74.5	.28	4.0
RANGE LOW		12.89	66.7		12.70	60.0	- .19	- 7.9
RANGE HIGH		13.44	76.9		14.17	89.7	1.07	20.7

Test B15--Sequence: Pictures and Words

Number of Items - 16

School	Spring, 1972 N	Spring, 1972 Raw Score	Spring, 1972 Percent Masters	Spring, 1973 N	Spring, 1973 Raw Score	Spring, 1973 Percent Masters	1972-73 Change Raw Score	1972-73 Change Percent Masters
16	27	10.70	22.2	26	11.19	38.5	.49	16.3
17	26	10.58	38.5	26	11.04	34.6	.46	- 3.9
18	25	10.28	32.0	30	11.80	46.7	1.52	14.7
19	29	9.24	27.6	29	10.59	34.5	1.35	6.9
20	28	9.46	25.0	30	9.87	13.3	.41	-11.7
AVERAGE		10.05	29.1		10.90	33.5	.85	4.4
RANGE LOW		9.24	22.2		9.87	13.3	.41	-11.7
RANGE HIGH		10.70	38.5		11.80	46.7	1.52	16.3

GRADE 1

RAW SCORE MEANS AND PERCENT MASTERS

Test B16--Classifies Ideas

Number of Items - 13

School	Spring, 1972 N	Raw Score	Percent Masters	Spring, 1973 N	Raw Score	Percent Masters	1972-73 Change Raw Score	Percent Masters
16	27	10.48	55.6	26	8.85	34.6	-1.63	-21.0
17	26	11.00	73.1	26	10.92	69.2	- .08	- 3.9
18	25	9.88	44.0	30	10.07	50.0	.19	6.0
19	29	6.76	20.7	29	11.72	79.3	4.96	58.6
20	28	9.68	53.6	30	8.53	30.0	-1.15	-23.6
AVERAGE		9.56	49.4		10.02	52.6	.46	3.2
RANGE LOW		6.76	20.7		8.53	30.0	-1.63	-23.6
RANGE HIGH		11.00	73.1		11.72	79.3	4.96	58.6

GRADE 2

Test B10--Written Directions

Number of Items - 15

School	Spring, 1972 N	Raw Score	Percent Masters	Spring, 1973 N	Raw Score	Percent Masters	1972-73 Change Raw Score	Percent Masters
16	28	9.04	35.7	29	14.66	96.6	5.62	60.9
17	28	14.14	92.9	28	13.43	89.3	- .71	- 3.6
18	25	11.72	60.0	30	14.00	90.0	2.28	30.0
19	29	12.97	82.8	30	14.03	93.3	1.06	10.5
20	28	11.71	64.3	30	12.70	73.3	.99	9.0
AVERAGE		11.92	67.1		13.76	88.5	1.84	21.4
RANGE LOW		9.04	35.7		12.70	73.3	- .71	- 3.6
RANGE HIGH		14.14	92.9		14.66	96.6	5.62	60.9

GRADE 2

RAW SCORE MEANS AND PERCENT MASTERS

Test C18--Ideas: Sequential Order

Number of Items - 10

School	Spring, 1972 N	Spring, 1972 Raw Score	Spring, 1972 Percent Masters	Spring, 1973 N	Spring, 1973 Raw Score	Spring, 1973 Percent Masters	1972-73 Change Raw Score	1972-73 Change Percent Masters
16	28	2.82	10.7	29	6.76	44.8	3.94	34.1
17	28	6.00	42.9	28	6.00	35.7	.00	- 7.2
18	25	3.44	24.0	30	5.97	43.3	2.53	19.3
19	29	6.52	48.3	30	6.27	43.3	- .25	- 5.0
20	28	4.71	25.0	30	4.07	20.0	- .64	- 5.0
AVERAGE		4.70	30.2		5.81	37.4	1.11	7.2
RANGE LOW		2.82	10.7		4.07	20.0	- .64	- 7.2
RANGE HIGH		6.52	48.3		6.76	44.8	3.94	34.1

Test C19--Judgments and Conclusions

Number of Items - 12

School	Spring, 1972 N	Spring, 1972 Raw Score	Spring, 1972 Percent Masters	Spring, 1973 N	Spring, 1973 Raw Score	Spring, 1973 Percent Masters	1972-73 Change Raw Score	1972-73 Change Percent Masters
16	28	7.36	25.0	29	9.45	48.3	2.09	23.3
17	28	9.18	42.9	28	10.25	75.0	1.07	32.1
18	25	9.04	48.0	30	9.83	73.3	.79	25.3
19	29	9.59	62.1	30	9.07	40.0	- .52	-22.1
20	28	9.61	50.0	30	8.83	46.7	- .78	- 3.3
AVERAGE		8.96	45.6		9.49	56.7	.53	11.1
RANGE LOW		7.36	25.0		8.83	40.0	- .78	-22.1
RANGE HIGH		9.61	62.1		10.25	75.0	2.09	32.1

GRADE 3

RAW SCORE MEANS AND PERCENT MASTERS

Test C12--Alphabetizes

Number of Items - 18

School	Spring, 1972 N	Raw Score	Percent Masters	Spring, 1973 N	Raw Score	Percent Masters	1972-73 Change Raw Score	Percent Masters
16	27	12.63	37.0	25	10.80	36.0	-1.83	- 1.0
17	28	15.29	64.3	27	14.93	74.1	- .36	9.8
18	24	11.87	41.7	30	12.33	40.0	.46	- 1.7
19	28	12.39	46.4	29	12.86	48.3	.47	1.9
20	27	12.33	40.7	29	13.45	58.6	1.12	17.9
AVERAGE		12.90	46.0		12.87	51.4	- .03	5.4
RANGE LOW		11.87	37.0		10.80	36.0	-1.83	- 1.7
RANGE HIGH		15.29	64.3		14.93	74.1	1.12	17.9

Test C13--Book Skills

Number of Items - 10

School	Spring, 1972 N	Raw Score	Percent Masters	Spring, 1973 N	Raw Score	Percent Masters	1972-73 Change Raw Score	Percent Masters
16	27	3.63	3.7	25	3.64	4.0	.01	.3
17	28	5.93	32.1	27	6.48	44.4	.55	12.3
18	24	3.50	4.2	30	6.00	16.7	2.50	12.5
19	28	4.39	14.3	29	6.79	55.2	2.40	40.9
20	27	3.93	.0	29	3.45	3.4	- .48	3.4
AVERAGE		4.28	10.9		5.27	24.7	.99	13.8
RANGE LOW		3.50	.0		3.45	3.4	- .48	.3
RANGE HIGH		5.93	32.1		6.79	55.2	2.50	40.9

GRADE 3

RAW SCORE MEANS AND PERCENT MASTERS

Test C18--Ideas: Sequential Order

Number of Items - 10

School	Spring, 1972 N	Raw Score	Percent Masters	Spring, 1973 N	Raw Score	Percent Masters	1972-73 Change Raw Score	Percent Masters
16	27	4.30	22.2	25	4.68	24.0	.38	1.8
17	28	7.50	64.3	27	6.78	55.6	- .72	- 8.7
18	24	4.75	25.0	30	6.70	60.0	1.95	35.0
19	28	5.96	42.9	29	6.62	62.1	.66	19.2
20	27	6.56	59.3	29	6.52	55.2	- .04	- 4.1
AVERAGE		5.81	42.7		6.26	51.4	.45	8.7
RANGE LOW		4.30	22.2		4.68	24.0	- .72	- 8.7
RANGE HIGH		7.50	64.3		6.78	62.1	1.95	35.0

GRADE 4

Test C13--Book Skills

Number of Items - 10

School	Spring, 1972 N	Raw Score	Percent Masters	Spring, 1973 N	Raw Score	Percent Masters	1972-73 Change Raw Score	Percent Masters
16	26	4.69	11.5	27	6.07	33.3	1.38	21.8
17	28	5.75	25.0	27	7.30	63.0	1.55	38.0
18	28	5.68	35.7	30	8.47	73.3	2.79	37.6
19	28	6.36	35.7	29	6.41	31.0	.05	- 4.7
20	27	6.93	51.9	30	6.50	36.7	- .43	-15.2
AVERAGE		5.88	32.0		6.95	47.5	1.07	15.5
RANGE LOW		4.69	11.5		6.07	31.0	- .43	-15.2
RANGE HIGH		6.93	51.9		8.47	73.3	2.79	38.0

GRADE 4

RAW SCORE MEANS AND PERCENT MASTERS

Test D17--Indexes

Number of Items - 12

School	Spring, 1972 N	Raw Score	Percent Masters	Spring, 1973 N	Raw Score	Percent Masters	1972-73 Change Raw Score	Percent Masters
16	26	7.65	26.9	27	9.00	48.1	1.35	21.2
17	28	9.00	32.1	27	10.52	74.1	1.52	42.0
18	28	8.96	46.4	30	9.77	63.3	.81	16.9
19	28	8.14	35.7	29	8.79	48.3	.65	12.6
20	27	7.78	29.6	30	9.90	66.7	2.12	37.1
AVERAGE		8.31	34.1		9.60	60.1	1.29	26.0
RANGE LOW		7.65	26.9		8.79	48.1	.65	12.6
RANGE HIGH		9.00	46.4		10.52	74.1	2.12	42.0

Test D24--Selects Relevant Materials

Number of Items - 24

School	Spring, 1972 N	Raw Score	Percent Masters	Spring, 1973 N	Raw Score	Percent Masters	1972-73 Change Raw Score	Percent Masters
16	26	13.62	15.4	27	14.96	14.8	1.34	- .6
17	28	20.07	71.4	27	19.37	59.3	- .70	-12.1
18	28	17.43	32.1	30	21.20	76.7	3.77	44.6
19	28	17.32	53.6	29	17.31	37.9	- .01	-15.7
20	27	18.11	33.3	30	17.97	50.0	- .14	16.7
AVERAGE		17.31	41.2		18.16	47.7	.85	6.5
RANGE LOW		13.62	15.4		14.96	14.8	- .70	-15.7
RANGE HIGH		20.07	71.4		21.20	76.7	3.77	44.6

GRADE 5

RAW SCORE MEANS AND PERCENT MASTERS

Test D12--Alphabetizes

Number of Items - 18

School	Spring, 1972 N	Spring, 1972 Raw Score	Spring, 1972 Percent Masters	Spring, 1973 N	Spring, 1973 Raw Score	Spring, 1973 Percent Masters	1972-73 Change Raw Score	1972-73 Change Percent Masters
16	27	14.93	70.4	26	14.96	65.4	.03	- 5.0
17	28	16.46	92.9	25	17.00	96.0	.54	3.1
18	25	16.24	92.0	30	17.03	100.0	.79	8.0
19	29	14.00	58.6	32	16.03	87.5	2.03	28.9
20	29	13.62	62.1	30	16.10	83.3	2.48	21.2
AVERAGE		15.05	75.2		16.22	86.4	1.17	11.2
RANGE LOW		13.62	58.6		14.96	65.4	.03	- 5.0
RANGE HIGH		16.46	92.9		17.03	100.0	2.48	28.9

Test D15--Table of Contents

Number of Items - 12

School	Spring, 1972 N	Spring, 1972 Raw Score	Spring, 1972 Percent Masters	Spring, 1973 N	Spring, 1973 Raw Score	Spring, 1973 Percent Masters	1972-73 Change Raw Score	1972-73 Change Percent Masters
16	27	7.74	18.5	26	5.77	11.5	-1.97	- 7.0
17	28	8.21	35.7	25	9.04	40.0	.83	4.3
18	25	8.24	36.0	30	9.13	33.3	.89	- 2.7
19	29	8.69	34.5	32	8.47	37.5	- .22	3.0
20	29	7.93	27.6	30	7.57	10.0	- .36	-17.6
AVERAGE		8.16	30.5		8.00	26.5	- .16	- 4.0
RANGE LOW		7.74	18.5		5.77	10.0	-1.97	-17.6
RANGE HIGH		8.69	36.0		9.13	40.0	.89	4.3

GRADE 5

RAW SCORE MEANS AND PERCENT MASTERS

Test D22--Headings & Subheadings

Number of Items - 12

School	Spring, 1972 N	Spring, 1972 Raw Score	Spring, 1972 Percent Masters	Spring, 1973 N	Spring, 1973 Raw Score	Spring, 1973 Percent Masters	1972-73 Change Raw Score	1972-73 Change Percent Masters
16	27	8.04	37.0	26	7.27	30.8	- .77	- 6.2
17	28	7.93	42.9	25	8.28	40.0	.35	- 2.9
18	25	8.56	36.0	30	8.20	33.3	- .36	- 2.7
19	29	7.34	24.1	32	8.34	37.5	1.00	13.4
20	29	7.17	20.7	30	8.53	46.7	1.36	26.0
AVERAGE		7.81	32.1		8.12	37.7	.31	5.6
RANGE LOW		7.17	20.7		7.27	30.8	- .77	- 6.2
RANGE HIGH		8.56	42.9		8.53	46.7	1.36	26.0

Test D25--Checks Facts

Number of Items - 14

School	Spring, 1972 N	Spring, 1972 Raw Score	Spring, 1972 Percent Masters	Spring, 1973 N	Spring, 1973 Raw Score	Spring, 1973 Percent Masters	1972-73 Change Raw Score	1972-73 Change Percent Masters
16	24	6.00	8.3	27	8.04	14.8	2.04	6.5
17	27	8.26	25.9	26	6.77	19.2	-1.49	- 6.7
18	27	5.11	.0	26	9.73	53.8	4.62	53.8
19	27	6.63	22.2	27	9.30	29.6	2.67	7.4
20	27	4.93	7.4	30	7.13	13.3	2.20	5.9
AVERAGE		6.19	12.8		8.19	26.1	2.00	13.3
RANGE LOW		4.93	.0		6.77	13.3	-1.49	- 6.7
RANGE HIGH		8.26	25.9		9.73	53.8	4.62	53.8

GRADE 6

RAW SCORE MEANS AND PERCENT MASTERS

Test C12--Alphabetizes

Number of Items - 18

School	Spring, 1972			Spring, 1973			1972-73 Change	
	N	Raw Score	Percent Masters	N	Raw Score	Percent Masters	Raw Score	Percent Masters
16	26	15.96	80.8	28	15.68	71.4	- .28	- 9.4
17	26	16.15	84.6	26	16.96	92.3	.81	7.7
18	22	16.18	86.4	30	17.17	96.7	.99	10.3
19	20	16.15	90.0	29	16.86	89.7	.71	- .3
20	27	16.52	92.6	30	17.17	93.3	.65	.7
AVERAGE		16.19	86.9		16.77	88.7	.58	1.8
RANGE LOW		15.96	80.8		15.68	71.4	- .28	- 9.4
RANGE HIGH		16.52	92.6		17.17	96.7	.99	10.3

Test D12--Alphabetizes

Number of Items - 18

School	Spring, 1972			Spring, 1973			1972-73 Change	
	N	Raw Score	Percent Masters	N	Raw Score	Percent Masters	Raw Score	Percent Masters
16	26	14.54	76.9	28	15.61	85.7	1.07	8.8
17	26	16.31	84.6	26	17.04	96.2	.73	11.6
18	22	16.18	95.5	30	16.90	93.3	.72	- 2.2
19	20	16.40	85.0	29	16.72	93.1	.32	8.1
20	27	15.85	74.1	30	17.13	96.7	1.28	22.6
AVERAGE		15.86	83.2		16.68	93.0	.82	9.8
RANGE LOW		14.54	74.1		15.61	85.7	.32	- 2.2
RANGE HIGH		16.40	95.5		17.13	96.7	1.28	22.6

GRADE 6

RAW SCORE MEANS AND PERCENT MASTERS

Test D13--Guide Words

Number of Items - 16

School	Spring, 1972 N	Raw Score	Percent Masters	Spring, 1973 N	Raw Score	Percent Masters	1972-73 Change Raw Score	Percent Masters
16	27	9.30	44.4	25	12.20	48.0	2.90	3.6
17	25	11.48	52.0	29	13.72	75.9	2.24	23.9
18	30	13.73	73.3	29	13.45	75.9	- .28	2.6
19	16	12.75	75.0	27	13.44	70.4	.69	- 4.6
20	28	12.07	60.7	29	12.28	55.2	.21	- 5.5
AVERAGE		11.87	61.1		13.02	65.1	1.15	4.0
RANGE LOW		9.30	44.4		12.20	48.0	- .28	- 5.5
RANGE HIGH		13.73	75.0		13.72	75.9	2.90	23.9

Test E9--Alphabetizes

Number of Items - 14

School	Spring, 1972 N	Raw Score	Percent Masters	Spring, 1973 N	Raw Score	Percent Masters	1972-73 Change Raw Score	Percent Masters
16	26	9.23	38.5	28	9.43	57.1	.20	18.6
17	26	10.92	65.4	26	12.46	84.6	1.54	19.2
18	22	10.14	59.1	30	11.50	73.3	1.36	14.2
19	20	11.20	70.0	29	12.45	79.3	1.25	9.3
20	27	10.04	55.6	30	11.30	63.3	1.26	7.7
AVERAGE		10.31	57.7		11.43	71.5	1.12	13.8
RANGE LOW		9.23	38.5		9.43	57.1	.20	7.7
RANGE HIGH		11.20	70.0		12.46	84.6	1.54	19.2

GRADE 6

RAW SCORE MEANS AND PERCENT MASTERS

Test E10--Guide Words

Number of Items - 16

School	Spring, 1972			Spring, 1973			1972-73 Change	
	N	Raw Score	Percent Masters	N	Raw Score	Percent Masters	Raw Score	Percent Masters
16	27	7.93	22.2	25	9.00	24.0	1.07	1.8
17	25	10.64	40.0	29	10.55	41.4	- .09	1.4
18	30	11.30	46.7	29	12.31	58.6	1.01	11.9
19	16	11.81	50.0	27	11.26	48.1	- .55	- 1.9
20	28	10.11	35.7	29	10.55	34.5	.44	- 1.2
AVERAGE		10.36	38.9		10.73	41.3	.37	2.4
RANGE LOW		7.93	22.2		9.00	24.0	- .55	- 1.9
RANGE HIGH		11.81	50.0		12.31	58.6	1.07	11.9

Test E14--Library

Number of Items - 18

School	Spring, 1972			Spring, 1973			1972-73 Change	
	N	Raw Score	Percent Masters	N	Raw Score	Percent Masters	Raw Score	Percent Masters
16	27	5.74	.0	25	7.00	.0	1.26	.0
17	25	7.16	.0	29	9.41	.0	2.25	.0
18	30	5.57	.0	29	7.55	13.8	1.98	13.8
19	16	9.19	18.8	27	7.48	3.7	-1.71	-15.1
20	28	7.75	7.1	29	6.79	.0	- .96	- 7.1
AVERAGE		7.08	5.2		7.65	3.5	.57	- 1.7
RANGE LOW		5.57	.0		6.79	.0	-1.71	-15.1
RANGE HIGH		9.19	18.8		9.41	13.8	2.25	13.8

GRADE 6

RAW SCORE MEANS AND PERCENT MASTERS

Test E19--Specialized References

Number of Items - 16

School	Spring, 1972			Spring, 1973			1972-73 Change	
	N	Raw Score	Percent Masters	N	Raw Score	Percent Masters	Raw Score	Percent Masters
16	27	6.96	7.4	26	8.08	11.5	1.12	4.1
17	25	7.88	8.0	27	8.78	11.1	.90	3.1
18	27	7.44	3.7	30	12.23	50.0	4.79	46.3
19	18	9.67	16.7	26	8.73	11.5	- .94	- 5.2
20	28	8.32	7.1	30	8.60	16.7	.28	9.6
AVERAGE		8.05	8.6		9.28	20.2	1.23	11.6
RANGE LOW		6.96	3.7		8.08	11.1	- .94	- 5.2
RANGE HIGH		9.67	16.7		12.23	50.0	4.79	46.3

APPENDIX I

Comparative Performance on Program-Embedded Achievement Tests of Pupils in Schools with Typical Performance at or above Grade Level Participating in the Reference Skills Subarea of Study Skills Field Test, 1972-73

GRADE 1

Raw Score Means and Percent Masters

Test B10--Written Directions

Number of Items-15

Test B16--Classifies Ideas

Number of Items-13

School	Spring 1972			Spring 1973			1972-73 Change		Spring 1972			Spring 1973			1972-73 Change	
	N	RS*	%M	N	RS	%M	RS	%M	N	RS	%M	N	RS	%M	RS	%M
1	30	12.03	70.0	30	11.23	60.0	-.80	-10.0	30	12.07	80.0	30	11.63	83.3	-.44	3.3
2	30	11.23	56.7	24	8.87	41.7	-2.36	-15.0	30	11.13	66.7	24	10.33	66.7	-.80	0.0
3	22	9.95	54.5	19	12.74	78.9	2.79	24.4	22	11.05	68.2	19	10.11	57.9	-.94	-10.3
4	27	12.07	66.7	28	13.25	85.7	1.18	19.0	27	11.81	88.9	28	12.43	100.0	.62	11.1
6	28	12.00	78.6	25	13.88	92.0	1.88	13.4	28	9.86	60.7	25	11.44	72.0	1.58	11.3
7	28	10.89	57.1	30	9.77	53.3	-1.12	-3.8	28	12.25	89.3	30	11.63	86.7	-.62	-2.6
8	29	12.90	69.0	23	12.13	69.6	-.77	0.6	29	12.41	93.1	23	11.00	78.3	-1.41	-14.8
9	29	13.28	82.8	30	14.07	90.0	.79	7.2	29	12.07	89.7	30	12.13	93.3	.06	3.6
10	26	12.19	61.5	30	11.63	70.0	-.56	8.5	26	10.96	73.1	30	12.00	86.7	1.04	13.6
11	28	11.93	64.3	30	14.07	93.3	2.14	29.0	28	11.32	75.0	30	12.53	96.7	1.21	21.7
12	28	10.29	53.6	27	12.48	70.4	2.19	16.8	28	10.18	53.6	27	11.44	77.8	1.26	24.2
13	29	12.62	79.3	30	12.10	70.0	-.52	-9.3	29	11.93	82.8	30	10.20	63.3	-1.73	-19.5
15	26	14.15	88.5	30	14.20	96.7	.05	8.2	26	12.54	96.2	30	12.50	96.7	-.04	-0.5
21	25	13.68	88.0	30	12.43	76.7	-1.25	-11.3	25	11.96	84.0	30	11.77	90.0	-.19	6.0
22	30	12.83	76.7	29	11.93	65.5	-.90	-11.2	30	11.50	76.7	29	12.00	86.2	.50	9.5
23	27	8.30	37.0	33	13.18	84.8	4.88	47.8	27	11.70	85.2	33	12.18	87.9	.48	2.7
32	31	14.71	100.0	37	14.62	97.3	-.09	-2.7	31	11.74	77.4	37	12.54	94.6	.80	17.2
AVERAGE		12.06	69.7		12.50	76.2	.44	6.6		11.56	48.9		11.64	83.4	.08	4.5
RANGE LOW		8.30	37.0		8.87	41.7	-2.36	-15.0		9.86	53.6		10.11	57.9	-1.73	-19.5
RANGE HIGH		14.71	100.0		14.62	97.3	4.88	47.8		12.54	9.2		12.54	100.0	1.58	24.2

*Raw Scores

Grade 1

Raw Score Means and Percent Masters

Test C19--Judgments & Conclusions

Number of Items-12

School	Spring 1972			Spring 1973			1972-73 Change	
	N	RS*	%M	N	RS	%M	RS	%M
1	30	10.03	73.3	30	9.73	50.0	-.30	-23.3
2	30	9.87	60.0	24	9.17	41.7	-.70	-18.3
3	22	9.73	54.5	19	9.84	63.2	.11	8.7
4	27	9.93	63.0	28	10.71	78.6	.78	15.6
6	28	8.71	46.4	25	9.68	60.0	.97	13.6
7	28	10.54	89.3	30	10.07	63.3	-.47	-26.0
8	29	10.48	72.4	23	9.17	30.4	-1.31	-42.0
9	29	10.28	69.0	30	9.47	46.7	-.81	-22.3
10	26	9.50	46.2	30	10.07	63.3	.57	17.1
11	28	9.68	46.4	30	9.77	60.0	.09	13.6
12	28	9.93	64.3	27	10.37	63.0	.44	-1.3
13	29	10.10	75.9	30	9.43	53.3	-.67	-22.6
15	26	10.42	84.6	30	10.17	60.0	-.25	-24.6
21	25	10.20	60.0	30	9.47	46.7	-.73	-13.3
22	30	10.10	60.0	29	10.52	79.3	.42	19.3
23	27	9.67	48.1	33	10.06	57.6	.39	9.5
32	31	10.10	61.3	37	10.62	81.1	.52	19.8
AVERAGE		9.96	63.2		9.90	58.7	-.06	-4.5
RANGE LOW		8.71	46.2		9.17	30.4	-1.31	-42.0
RANGE HIGH		10.54	89.3		10.71	81.1	.97	19.8

*Raw Scores

GRADE 2

Raw Score Means and Percent Masters

School	Test C12--Alphabetizes Number of Items-18								Test C13--Book Skills Number of Items-10							
	Spring 1972			Spring 1973			1972-73 Change		Spring 1972			Spring 1973			1972-73 Change	
	N	RS*	%M	N	RS	%M	RS	%M	N	RS	%M	N	RS	%M	RS	%M
1	27	14.63	66.7	30	14.37	70.0	-.26	3.3	27	6.37	29.6	30	6.00	33.3	-.37	3.7
2	26	13.38	57.7	25	14.08	56.0	.70	-1.7	26	5.00	3.8	25	6.08	16.0	1.08	12.2
3	17	13.29	52.9	23	13.30	56.5	.01	3.6	17	4.94	17.6	23	4.74	13.0	-.20	-4.6
4	27	15.07	66.7	19	16.47	89.5	1.40	22.8	27	6.07	29.6	19	6.37	31.6	.30	2.0
6	19	12.42	52.6	36	13.75	58.3	1.33	5.7	19	3.05	5.3	36	6.94	41.7	3.89	36.4
7	30	13.43	50.0	30	13.17	40.0	-.26	-10.0	30	5.73	26.7	30	5.83	23.3	.10	-3.4
8	29	11.03	31.0	26	12.96	53.8	1.93	22.8	29	5.48	20.7	26	5.19	19.2	-.29	-1.5
9	28	14.64	64.3	31	14.13	58.1	-.51	-6.2	28	6.04	32.1	31	5.26	19.4	-.78	-12.7
10	28	15.89	78.6	30	13.83	53.3	-2.06	-25.3	28	6.79	46.4	30	6.00	36.7	-.79	-9.7
11	28	16.46	89.3	24	15.58	75.0	-.88	-14.3	28	8.18	64.3	24	7.17	50.0	-1.01	-14.3
12	26	14.00	57.7	16	14.62	75.0	.62	17.3	26	4.85	11.5	16	6.00	31.3	1.15	19.8
13	28	14.07	64.3	29	13.07	55.2	-1.00	-9.1	28	6.61	39.3	29	5.62	24.1	-.99	-15.2
15	20	14.25	55.0	21	15.19	71.4	.94	16.4	20	5.50	35.0	21	6.76	57.1	1.26	22.1
21	29	15.41	75.9	30	14.37	66.7	-1.04	-9.2	29	6.86	44.8	30	6.87	46.7	.01	1.9
22	31	14.45	58.1	24	15.87	79.2	1.42	21.1	31	5.81	22.6	24	7.79	62.5	1.98	39.9
23	21	12.67	47.6	32	13.47	50.0	.80	2.4	21	4.86	4.8	32	4.44	6.3	-.42	1.5
32	29	12.72	41.4	20	15.45	75.0	2.73	33.6	29	7.34	55.2	20	7.05	50.0	-.29	-5.2
AVERAGE		13.99	59.4		14.33	53.4	.34	4.3		5.85	28.8		6.12	33.1	.27	4.3
RANGE LOW		11.03	31.0		12.96	40.0	-2.06	-25.3		3.05	3.8		4.44	6.3	-1.01	-15.2
RANGE HIGH		16.46	89.3		16.47	89.5	2.73	33.6		8.18	64.3		7.79	62.5	3.89	39.9

*Raw Scores

GRADE 2

Raw Score Means and Percent Masters

Test C18--Ideas: Sequential Order

Number of Items-10

School	Spring 1972			Spring 1973			1972-73 Change	
	N	RS*	%M	N	RS	%M	RS	%M
1	27	7.44	66.7	30	8.30	76.7	.86	10.0
2	26	7.77	65.4	25	6.52	48.0	-1.25	-17.4
3	17	6.76	52.9	23	8.52	87.0	1.76	34.1
4	27	7.85	77.8	19	8.05	78.9	.20	1.1
6	19	6.21	42.1	36	6.75	50.0	.54	7.9
7	30	6.87	63.3	30	7.40	66.7	.53	3.4
8	29	7.38	65.5	26	7.27	65.4	-.11	-0.1
9	28	8.89	89.3	31	7.35	58.1	-1.54	-31.2
10	28	8.11	78.6	30	8.17	76.7	.06	-1.9
11	28	9.25	92.9	24	9.33	100.0	.08	7.1
12	26	7.27	65.4	16	7.37	68.8	.10	3.4
13	28	7.57	71.4	29	8.17	79.3	.60	7.9
15	20	7.65	70.0	21	8.38	81.0	.73	11.0
21	29	9.24	96.6	30	7.63	66.7	-1.61	-29.9
22	31	7.35	54.8	24	8.29	70.8	.94	16.0
23	21	7.86	71.4	32	6.81	56.3	-1.05	-15.1
32	29	8.76	79.3	20	8.70	85.0	-.06	5.7
AVERAGE		7.78	70.8		7.82	71.5	.04	0.7
RANGE LOW		6.21	42.1		6.52	48.0	-1.61	-31.2
RANGE HIGH		9.25	96.6		9.33	100.0	1.76	34.1

*Raw Scores

GRADE 3

Raw Score Means and Percent Masters

Test C12--Alphabetizes

Number of Items-18

Test D12--Alphabetizes

Number of Items-18

School	Spring 1972			Spring 1973			1972-73 Change		Spring 1972			Spring 1973			1972-73 Change	
	N	RS*	%M	N	RS	%M	RS	%M	N	RS	%M	N	RS	%M	RS	%M
1	29	14.21	58.6	26	17.00	96.2	2.79	37.6	29	14.31	72.4	26	15.58	80.8	1.27	8.4
2	30	14.67	66.7	29	14.76	69.0	.09	2.3	30	15.40	76.7	29	14.55	72.4	-.85	-4.3
3	21	16.24	85.7	16	15.81	81.3	-.43	-4.4	21	15.81	76.2	16	15.00	68.8	-.81	-7.4
4	24	16.87	95.8	27	16.15	74.1	-.72	-21.7	24	15.63	79.2	27	16.07	81.5	.44	2.3
6	18	14.78	77.8	17	15.41	82.4	.63	4.6	18	15.50	77.8	17	14.94	70.6	-.56	-7.2
7	27	15.78	81.5	30	15.80	76.7	.02	-4.8	27	15.63	77.8	30	15.40	80.0	-.23	2.2
8	27	15.44	77.8	27	15.93	70.4	.49	-7.4	27	16.07	77.8	27	15.63	74.1	-.44	-3.7
9	30	16.43	90.0	30	17.37	100.0	.94	10.0	30	16.37	83.3	30	15.70	83.3	-.67	0.0
10	30	15.13	66.7	30	16.53	86.7	1.40	20.0	30	15.13	70.0	30	14.63	70.0	-.50	0.0
11	30	15.37	73.3	30	16.20	83.3	.83	10.0	30	14.90	66.7	30	15.37	80.0	.47	13.3
12	36	16.14	86.1	28	15.71	78.6	-.43	-7.5	36	15.64	75.0	28	15.46	78.6	-.18	3.6
13	28	15.54	71.4	28	15.57	67.9	.03	-3.5	28	15.79	82.1	28	12.50	53.6	-3.29	-28.5
15	21	15.95	76.2	22	15.41	72.7	-.54	-3.5	21	15.71	81.0	22	14.77	77.3	-.94	-3.7
21	30	15.17	63.3	28	15.71	78.6	.54	15.3	30	15.53	80.0	28	14.93	60.7	-.60	-19.3
22	30	16.57	86.7	28	15.96	75.0	-.61	-11.7	30	16.37	83.3	28	14.79	60.7	-1.58	-22.6
23	32	16.47	90.6	30	15.93	83.3	-.54	-7.3	32	16.12	87.5	30	15.73	76.7	-.39	-10.8
32	23	15.35	78.3	27	16.52	85.2	1.17	6.9	23	14.83	60.9	27	16.07	88.9	1.24	28.0
AVERAGE		15.65	78.0		15.99	80.1	.34	2.1		15.57	76.9		15.12	74.0	-.45	-2.9
RANGE LOW		14.21	58.6		14.76	67.9	-.72	-21.7		14.31	60.9		12 50	53.6	-3.29	-28.5
RANGE HIGH		16.87	95.8		17.37	100.0	2.79	37.6		16.37	87.5		16.07	88.9	1.27	28.0

*Raw Scores

GRADE 3

Raw Score Means and Percent Masters

Test D24--Selects Relevant Materials

Number of Items-24

Test E9--Alphabetizes

Number of Items-14

School	Spring 1972			Spring 1973			1972-73 Change		Spring 1972			Spring 1973			1972-73 Change	
	N	RS*	%M	N	RS	%M	RS	%M	N	RS	%M	N	RS	%M	RS	%M
1	25	18.88	60.0	25	19.56	64.0	.68	4.0	29	8.55	34.5	26	8.50	34.6	-.05	0.1
2	25	18.80	56.0	24	18.67	58.3	-.13	2.3	30	7.43	30.0	29	8.10	31.0	.67	1.0
3	22	20.27	72.7	17	17.88	52.9	-2.39	-19.8	21	10.05	23.8	16	7.44	25.0	-2.61	1.2
4	23	20.30	65.2	23	20.61	82.6	.31	17.4	24	8.87	50.0	27	9.07	25.9	.20	-24.1
6	18	18.56	38.9	18	18.17	55.6	-.39	16.7	18	8.33	22.2	17	9.12	47.1	.79	24.9
7	24	19.87	70.8	25	19.56	56.0	-.31	-14.8	27	10.44	55.6	30	9.13	50.0	-1.31	-5.6
8	22	19.32	68.2	22	17.64	45.5	-1.68	-22.7	27	8.56	29.6	27	7.44	25.9	-1.12	-3.7
9	24	18.25	50.0	25	20.20	80.0	1.95	30.0	30	10.13	56.7	30	10.43	50.0	.30	-6.7
10	25	20.12	68.0	24	19.83	66.7	-.29	-1.3	30	8.23	36.7	30	10.83	53.3	2.60	16.6
11	23	21.00	73.9	25	20.64	76.0	-.36	2.1	30	10.17	56.7	30	10.27	53.3	.10	-3.4
12	23	18.74	56.5	23	19.83	60.9	1.09	4.4	36	8.25	41.7	28	9.00	50.0	.75	8.3
13	24	18.08	37.5	25	17.84	48.0	-.24	10.5	28	7.93	32.1	28	6.14	21.4	-1.79	-10.7
15	19	20.63	73.7	22	20.73	77.3	.10	3.6	21	10.43	52.4	22	9.27	40.9	-1.16	-11.5
21	24	20.37	66.7	24	20.00	66.7	-.37	0.0	30	9.20	43.3	28	8.71	35.7	-.49	-7.6
22	23	19.83	65.2	25	17.48	36.0	-2.35	-29.2	30	11.77	73.3	28	8.61	32.1	-3.16	-41.2
23	23	18.52	78.3	24	18.50	50.0	-.02	-28.3	32	9.84	43.8	30	8.73	36.7	-1.11	-7.1
32	22	21.36	72.7	25	20.88	88.0	-.48	15.3	23	9.61	43.5	27	10.52	63.0	.91	19.5
AVERAGE		19.58	63.2		19.30	62.6	-.28	-0.6		9.28	42.7		8.90	39.8	-.38	-2.9
RANGE LOW		18.08	37.5		17.48	36.0	-2.39	-29.2		7.43	22.2		6.14	21.4	-3.16	-41.2
RANGE HIGH		21.36	78.3		20.88	88.0	1.95	30.0		11.77	73.3		10.83	63.0	2.60	24.9

*Raw Scores

GRADE 4

Raw Score Means and Percent Masters

Test D13--Guide Words

Number of Items-16

Test D22--Headings & Subheadings

Number of Items-12

School	Spring 1972			Spring 1973			1972-73 Change		Spring 1972			Spring 1973			1972-73 Change	
	N	RS*	%M	N	RS	%M	RS	%M	N	RS	%M	N	RS	%M	RS	%M
1	27	13.81	81.5	30	13.17	80.0	-.64	-1.5	27	9.93	66.7	30	9.70	56.7	-.23	-10.0
2	27	13.00	70.4	28	12.14	60.7	-.86	-9.7	27	9.30	59.3	28	9.50	53.6	.20	-5.7
3	20	10.65	40.0	24	10.33	37.5	-.32	-2.5	20	8.55	45.0	24	8.83	50.0	.28	5.0
4	33	12.58	69.7	22	13.09	72.7	.51	3.0	33	8.79	51.5	22	9.86	72.7	1.07	21.2
6	17	12.59	70.6	24	10.75	41.7	-1.84	-28.9	17	8.53	58.8	24	8.25	45.8	-.28	-13.0
7	25	12.40	68.0	30	13.43	73.3	1.03	5.3	25	8.76	60.0	30	8.80	50.0	.04	-10.0
8	29	13.62	79.3	29	14.38	86.2	.76	6.9	29	9.72	72.4	29	9.93	65.5	.21	-6.9
9	29	12.34	51.7	29	12.69	65.5	.35	13.8	29	9.28	62.1	29	9.93	82.8	.65	20.7
10	29	13.66	72.4	28	13.36	71.4	-.30	-1.0	29	9.83	62.1	28	9.93	57.1	.10	-5.0
11	29	13.90	82.8	30	14.50	90.0	.60	7.2	29	9.83	75.9	30	10.60	86.7	.77	10.8
12	38	11.42	47.4	29	12.86	65.5	1.44	18.1	38	8.24	36.8	29	9.52	58.6	1.28	21.8
13	29	13.10	72.4	29	12.48	65.5	-.62	-6.9	29	10.66	86.2	29	9.52	62.1	-1.14	-24.1
15	20	11.65	45.0	20	12.70	70.0	1.05	25.0	20	8.90	60.0	20	9.40	55.0	.50	-5.0
21	29	13.21	75.9	29	13.24	65.5	.03	-10.4	29	9.55	48.3	29	10.38	72.4	.83	24.1
22	30	11.67	53.3	36	12.94	66.7	1.27	13.4	30	8.30	40.0	36	9.78	61.1	1.48	21.1
23	34	13.00	70.6	33	14.18	81.8	1.18	11.2	34	9.50	58.8	33	10.30	69.7	.80	10.9
32	31	14.58	43.5	23	13.35	73.9	-1.23	-19.6	31	10.58	83.9	23	10.22	78.3	-.36	-5.6
AVERAGE		12.78	67.3		12.92	68.7	.14	1.4		9.31	60.5		9.67	63.4	.36	3.0
RANGE LOW		10.65	40.0		10.33	37.5	-1.84	-28.9		8.24	36.8		8.25	45.8	-1.14	-24.1
RANGE HIGH		14.58	93.5		14.50	90.0	1.44	25.0		10.66	86.2		10.60	86.7	1.48	24.1

*Raw Scores

GRADE 4

Raw Score Means and Percent Masters

Test D25--Checks Facts

Number of Items-14

Test E10--Guide Words

Number of Items-16

School	Spring 1972			Spring 1973			1972-73 Change		Spring 1972			Spring 1973			1972-73 Change	
	N	RS*	%M	N	RS	%M	RS	%M	N	RS	%M	N	RS	%M	RS	%M
1	24	6.12	8.3	25	8.00	24.0	1.88	15.7	27	8.74	11.1	30	12.30	70.0	3.56	58.9
2	24	8.00	16.7	22	9.91	31.8	1.91	15.1	27	9.63	22.2	28	9.71	42.9	.08	20.7
3	20	8.40	15.0	24	8.21	20.8	-.19	5.8	20	7.70	15.0	24	7.96	12.5	.26	-2.5
4	25	8.72	32.0	24	9.50	41.7	.78	9.7	33	8.61	21.2	22	11.91	54.5	3.30	33.3
6	18	7.22	16.7	22	9.55	40.9	2.33	24.2	17	10.18	41.2	24	9.21	16.7	-.97	-24.5
7	21	8.19	9.5	25	9.80	32.0	1.61	22.5	25	8.40	12.0	30	10.20	33.3	1.80	21.3
8	24	9.54	29.2	23	10.52	43.5	.98	14.3	29	10.52	37.9	29	11.21	41.4	.69	3.5
9	22	7.36	9.1	24	8.92	29.2	1.56	20.1	29	8.97	20.7	29	10.62	37.9	1.65	17.2
10	25	10.00	44.0	25	9.84	24.0	-.16	-20.0	29	10.34	37.9	28	9.71	32.1	-.63	-5.8
11	25	9.24	24.0	25	11.68	64.0	2.44	40.0	29	10.90	41.4	30	12.73	66.7	1.83	25.3
12	25	6.56	16.0	25	9.16	36.0	2.60	20.0	38	8.79	21.1	29	9.55	34.5	.76	13.4
13	23	10.00	47.8	23	7.78	8.7	-2.22	-39.1	29	10.69	37.9	29	8.38	27.6	-2.31	-10.3
15	19	7.42	10.5	21	8.48	14.3	1.06	3.8	20	7.60	10.0	20	10.45	40.0	2.85	30.0
21	22	10.18	50.0	25	8.56	24.0	-1.62	-26.0	29	10.90	37.9	29	10.03	41.4	-.87	3.5
22	23	9.26	30.4	25	9.40	40.0	.14	9.6	30	9.30	30.0	36	9.28	19.4	-.02	-10.6
23	22	9.55	40.9	25	11.04	52.0	1.49	11.1	34	10.71	29.4	33	13.03	63.6	2.32	34.2
32	32	11.41	62.5	24	12.42	66.7	1.01	4.2	31	11.19	41.9	23	11.43	34.8	.24	-7.1
AVERAGE		8.66	27.2		9.57	34.9	.91	7.7		9.60	27.6		10.45	39.4	.85	11.8
RANGE LOW		6.12	8.3		7.78	8.7	-2.22	-39.1		7.60	10.0		7.96	12.5	-2.31	-24.5
RANGE HIGH		11.41	62.5		12.42	66.7	2.60	40.0		11.19	41.9		13.03	70.0	3.56	58.9

*Raw Scores

GRADE 5

Raw Score Means and Percent Masters

Test E19--Specialized References

Number of Items-16

Test E23--Outlining

Number of Items-12

School	Spring 1972			Spring 1973			1972-73 Change		Spring 1972			Spring 1973			1972-73 Change	
	N	RS*	%M	N	RS	%M	RS	%M	N	RS	%M	N	RS	%M	RS	%M
1	21	11.33	47.6	23	10.74	34.8	-.59	-12.8	27	7.59	25.9	30	9.53	63.3	1.94	37.4
2	21	9.95	33.3	24	10.25	41.7	.30	8.4	29	7.83	31.0	25	8.36	52.0	.53	21.0
3	30	9.97	26.7	24	10.96	33.3	.99	6.6	29	8.41	37.9	23	8.48	47.8	.07	9.9
4	21	10.71	33.3	24	11.12	41.7	.41	8.4	36	8.06	33.3	31	8.19	35.5	.13	2.2
6	21	10.71	33.3	23	10.78	26.1	.07	-7.2	24	8.04	50.0	21	7.48	28.6	-.56	-21.4
7	25	11.40	44.0	23	11.52	47.8	.12	3.8	28	8.32	35.7	28	9.14	53.6	.82	17.9
8	22	10.77	36.4	25	12.64	56.0	1.87	19.6	29	7.52	34.5	27	8.48	33.3	.96	-1.2
9	21	10.71	33.3	24	12.75	62.5	2.04	29.2	38	8.03	44.7	30	8.40	36.7	.37	-8.0
10	23	12.26	52.2	25	13.28	64.0	1.02	11.8	26	7.54	34.6	30	8.63	50.0	1.09	15.4
11	22	12.36	54.5	24	14.46	87.5	2.10	33.0	26	9.08	61.5	30	10.33	66.7	1.25	5.2
12	24	10.71	45.8	24	10.29	45.8	-.42	0.0	35	8.09	45.7	29	7.38	37.9	-.71	-7.8
13	24	9.62	33.3	25	9.88	24.0	.26	-9.3	30	7.33	36.7	26	7.38	34.6	.05	-2.1
15	19	10.68	26.3	20	9.50	45.0	-1.18	18.7	20	8.95	55.0	19	7.95	47.4	-1.00	-7.6
21	24	9.83	33.3	24	10.67	12.5	.84	-20.8	27	6.70	11.1	29	8.52	44.8	1.82	33.7
22	24	10.96	33.3	25	11.64	52.0	.68	18.7	30	8.70	40.0	30	8.30	33.3	-.40	-6.7
23	20	12.65	65.0	22	12.82	59.1	.17	-5.9	31	9.00	51.6	31	8.90	51.6	-.10	0.0
32	25	12.64	64.0	30	13.53	73.3	.89	9.3	29	8.31	44.8	30	9.73	66.7	1.42	21.9
AVERAGE		11.02	40.9		11.58	47.5	.56	6.6		8.09	39.6		8.54	46.1	.45	6.5
RANGE LOW		9.62	26.3		9.50	12.5	-1.18	-20.8		6.70	11.1		7.38	28.6	-1.00	-21.4
RANGE HIGH		12.65	65.0		14.46	87.5	2.10	33.0		9.08	61.5		10.33	66.7	1.94	37.4

*Raw Scores

GRADE 5

Raw Score Means and Percent Masters

Test E25--Infers to Generalize

Number of Items-14

Test F14--Dictionary: Pronunciation

Number of Items-12

School	Spring 1972			Spring 1973			1972-73 Change		Spring 1972			Spring 1973			1972-73 Change	
	N	RS*	%M	N	RS	%M	RS	%M	N	RS	%M	N	RS	%M	RS	%M
1	27	8.33	18.5	30	10.13	30.0	1.80	11.5	27	7.37	33.3	30	8.20	46.7	.83	13.4
2	29	8.41	20.7	25	9.84	36.0	1.43	15.3	29	6.69	24.1	25	8.56	44.0	1.87	19.9
3	29	8.17	17.2	23	8.87	21.7	.70	4.5	29	8.52	31.0	23	8.83	43.5	.31	12.5
4	36	9.47	30.6	31	9.87	45.2	.40	14.6	36	7.67	38.9	31	7.48	25.8	-.19	-13.1
6	24	8.33	20.8	21	8.67	23.8	.34	3.0	24	8.75	45.8	21	7.57	42.9	-1.18	-2.9
7	28	9.82	28.6	28	9.57	35.7	-.25	7.1	28	6.96	32.1	28	7.93	32.1	.97	0.0
8	29	8.07	6.9	27	10.19	37.0	2.12	30.1	29	6.17	24.1	27	7.52	29.6	1.35	5.5
9	38	9.24	39.5	30	9.30	30.0	.06	-9.5	38	7.42	31.6	30	8.17	36.7	.75	5.1
10	26	9.58	26.9	30	9.70	36.7	.12	9.8	26	8.19	38.5	30	8.43	43.3	.24	4.8
11	26	10.23	42.3	30	11.60	60.0	1.37	17.7	26	7.73	34.6	30	10.03	76.7	2.30	42.1
12	35	9.11	22.9	29	8.72	27.6	-.39	4.7	35	8.26	45.7	29	7.86	41.4	-.40	-4.3
13	30	8.67	26.7	26	9.04	23.1	.37	-3.6	30	7.13	33.3	26	6.81	23.1	-.32	-10.2
15	20	10.20	30.0	19	9.32	21.1	-.88	-8.9	20	8.75	55.0	19	8.84	63.2	.09	8.2
21	27	8.56	22.2	29	9.41	20.7	.85	-1.5	27	7.22	40.7	29	8.62	41.4	1.40	0.7
22	30	9.03	13.3	30	8.47	13.3	-.56	0.0	30	8.80	56.7	30	9.03	56.7	.23	0.0
23	31	10.23	45.2	31	9.35	35.5	-.88	-9.7	31	8.52	48.4	31	8.00	32.3	-.52	-16.1
32	29	10.45	31.0	30	10.10	36.7	-.35	5.7	29	9.03	55.2	30	9.63	66.7	.60	11.5
AVERAGE		9.17	26.1		9.54	31.4	.37	5.3		7.83	39.4		8.32	43.9	.49	4.5
RANGE LOW		8.07	6.9		8.47	13.3	-.88	-9.7		6.17	24.1		6.81	23.1	-1.18	-16.1
RANGE HIGH		10.45	45.2		11.60	60.0	2.12	30.1		9.03	56.7		10.03	66.7	2.30	42.1

*Raw Scores

GRADE 6

Raw Score Means and Percent Masters

School	Test El1--Card Catalog, Number of Items-16								Test El4--Library, Number of Items-18							
	Spring 1972			Spring 1973			1972-73 Change		Spring 1972			Spring 1973			1972-73 Change	
	N	RS*	%M	N	RS	%M	RS	%M	N	RS	%M	N	RS	%M	RS	%M
1	23	13.96	73.9	27	12.85	63.0	-1.11	-10.9	23	10.48	13.0	24	11.67	29.2	1.19	16.2
2	29	13.17	75.9	28	12.54	64.3	-.63	-11.6	28	12.18	28.6	27	11.37	22.2	-.81	-6.4
3	21	11.48	52.4	33	12.64	51.5	1.16	-0.9	19	12.74	42.1	34	12.82	26.5	.08	-15.6
4	20	11.20	40.0	19	13.53	78.9	2.33	38.9	18	9.06	11.1	18	13.61	61.1	4.55	50.0
6	30	11.83	50.0	19	11.53	52.6	-.30	2.6	28	10.21	28.6	19	11.00	21.1	.79	-7.5
7	30	11.30	46.7	30	12.97	63.3	1.67	16.6	25	8.76	0.0	30	11.83	36.7	3.07	36.7
8	28	12.07	57.1	23	12.52	56.5	.45	-0.6	32	11.41	21.9	29	12.48	24.1	1.07	2.2
9	28	12.57	64.3	22	12.23	59.1	-.34	-5.2	27	13.37	40.7	19	13.68	36.8	.31	-3.9
10	30	10.67	26.7	28	13.93	85.7	3.26	59.0	29	9.00	6.9	29	10.52	17.2	1.52	10.3
11	29	13.03	62.1	30	13.67	70.0	.64	7.9	26	12.08	34.6	30	15.23	70.0	3.15	35.4
12	18	12.72	50.0	21	11.29	47.6	-1.43	-2.4	18	11.44	16.7	19	10.89	10.5	-.55	-6.2
13	30	12.40	63.3	29	11.10	41.4	-1.30	-21.9	30	12.53	43.3	26	11.08	19.2	-1.45	-24.1
15	18	11.39	44.4	23	11.87	56.5	.48	12.1	18	9.83	22.2	23	12.57	30.4	2.74	8.2
21	29	11.21	41.4	29	13.41	72.4	2.20	31.0	24	8.46	8.3	30	10.43	6.7	1.93	-1.6
22	27	12.96	59.3	27	12.85	74.1	-.11	14.8	28	9.96	14.3	28	13.57	42.9	3.61	28.6
23		---			---		---			---			---		---	
32	28	12.82	50.0	33	13.12	66.7	.30	16.7	24	12.42	26.9	33	12.48	27.3	.06	0.4
AVERAGE		12.17	50.4		12.63	59.0	.46	8.6		10.87	21.1		12.20	28.3	1.33	7.2
RANGE LOW		10.67	26.7		11.10	41.4	-1.43	-21.9		8.46	0.0		10.43	6.7	-1.45	-24.1
RANGE HIGH		13.96	75.9		13.93	85.7	3.26	59.0		13.37	43.3		15.23	70.0	4.55	50.0

*Raw Scores

GRADE 6

Raw Score Means and Percent Masters

Test F10--Card Catalog — Number of Items-16

Test F13--Library — Number of Items-20

School	Spring 1972			Spring 1973			1972-73 Change		Spring 1972			Spring 1973			1972-73 Change	
	N	RS*	%M	N	RS	%M	RS	%M	N	RS	%M	N	RS	%M	RS	%M
1	23	12.74	56.5	27	12.33	55.6	-.41	-0.9	23	17.04	69.6	24	16.33	66.7	-.71	-2.9
2	29	12.10	62.1	28	9.39	35.7	-2.71	-26.4	28	16.57	75.0	27	15.22	66.7	-1.35	-8.3
3	21	9.90	38.1	33	11.48	54.5	1.58	16.4	19	15.53	73.7	34	17.38	91.2	1.85	17.5
4	20	10.35	40.0	19	11.53	57.9	1.18	17.9	18	15.44	55.6	18	15.94	66.7	.50	11.1
6	30	10.30	40.0	19	10.47	36.8	.17	-3.2	28	13.93	35.7	19	13.26	36.8	-.67	1.1
7	30	10.07	30.0	30	9.97	36.7	-.10	6.7	25	17.16	80.0	30	16.47	73.3	-.69	-6.7
8	28	11.68	53.6	23	10.61	47.8	-1.07	-5.8	32	16.44	78.1	29	17.52	72.4	1.08	-5.7
9	28	11.68	53.6	22	11.59	54.5	-.09	0.9	27	17.33	92.6	19	17.05	84.2	-.28	-8.4
10	30	10.20	36.7	28	12.3	60.7	2.16	24.0	29	16.69	69.0	29	17.00	75.9	.31	6.9
11	29	11.38	48.3	30	12.40	63.3	.88	15.0	26	17.04	76.9	30	18.27	93.3	1.23	16.4
12	18	10.11	16.7	21	5.95	0.0	-4.16	-16.7	18	16.56	61.1	19	17.11	68.4	.55	7.3
13	30	11.33	50.0	29	8.62	17.2	-2.71	-32.8	30	17.23	80.0	26	16.31	65.4	-.92	-14.6
15	18	10.06	38.9	23	10.35	39.1	.29	0.2	18	16.78	77.8	23	17.61	91.3	.83	13.5
21	29	9.17	20.7	29	10.83	34.5	1.66	13.8	24	15.58	54.2	30	17.17	80.0	1.59	25.8
22	27	10.93	33.3	27	12.11	51.9	1.18	18.6	28	16.71	71.4	28	17.21	82.1	.50	10.7
23		---			---		---			---			---		---	
12	28	12.07	57.1	33	11.42	48.5	-.65	-8.6	26	16.62	84.6	33	17.21	84.8	.59	0.2
AVERAGE		10.89	39.7		10.71	40.9	-.18	1.1		16.42	66.8		16.69	70.5	.27	3.8
RANGE LOW		9.17	16.7		8.62	0.0	-4.16	-32.8		13.93	35.7		13.26	36.8	-1.35	-14.6
RANGE HIGH		12.74	62.1		12.36	63.3	2.16	24.0		17.33	92.6		18.27	93.3	1.85	25.8

*Raw Scores

GRADE 6

Raw Score Means and Percent Masters

Test F16--Subject Index to Children's Magazines

Number of Items-12

Test G11--Catalog Cards

Number of Items-16

School	Spring 1972			Spring 1973			1972-73 Change		Spring 1972			Spring 1973			1972-73 Change	
	N	RS*	%M	N	RS	%M	RS	%M	N	RS	%M	N	RS	%M	RS	%M
1	24	9.08	58.3	23	9.17	60.9	.09	2.6	23	14.57	95.7	27	13.19	74.1	-1.38	-21.6
2	25	7.16	36.0	25	8.84	56.0	1.68	20.0	29	13.66	75.9	28	12.61	67.9	-1.05	-8.0
3	22	7.18	27.3	29	7.38	17.2	.20	-10.1	21	12.14	61.9	33	13.61	78.8	1.47	16.9
4	20	7.70	35.0	20	7.50	30.0	-.20	-5.0	20	12.70	60.0	19	13.05	78.9	.35	18.9
6	30	6.47	26.7	22	8.14	45.5	1.67	18.8	30	11.83	53.3	19	12.00	42.1	.17	-11.2
7	24	8.13	37.5	24	9.92	66.7	1.79	29.2	30	12.33	63.3	30	10.47	33.3	-1.86	-30.0
8	22	8.55	45.5	24	8.58	41.7	.03	-3.8	28	12.96	71.4	23	11.52	39.1	-1.44	-32.3
9	23	7.78	39.1	21	8.52	47.6	.74	8.5	28	13.00	57.1	22	13.00	72.7	.00	15.6
10	24	7.79	33.3	24	9.54	62.5	1.75	29.2	30	11.70	43.3	28	14.82	92.9	3.12	49.6
11	20	8.50	40.0	24	9.62	62.5	1.12	22.5	29	13.52	65.5	30	13.73	70.0	.21	4.5
12	17	8.53	47.1	21	7.76	47.6	-.77	0.5	18	12.50	61.1	21	12.67	57.1	.17	-4.0
13	25	8.80	40.0	25	7.88	40.0	-.92	0.0	30	13.13	73.3	29	9.59	48.3	-3.54	-25.0
15	17	8.00	41.2	19	9.32	63.2	1.32	22.0	18	13.17	72.2	23	13.48	73.9	.31	1.7
21	24	5.83	20.8	25	9.04	48.0	3.21	27.2	29	11.55	44.8	29	12.52	58.6	.97	13.8
22	21	6.90	23.8	24	7.33	20.8	.43	-3.0	27	13.26	70.4	27	13.15	70.4	-.11	0.0
23		---			---		---			---			---		---	
32	23	7.96	43.5	23	9.13	60.9	1.17	17.4	28	13.86	85.7	33	13.30	69.7	-.56	-16.0
AVERAGE		7.77	35.0		8.60	45.4	.83	10.4		12.87	62.1		12.67	60.5	-.20	-1.6
RANGE LOW		5.83	20.8		7.33	17.2	-.92	-10.1		11.55	43.3		9.59	33.3	-3.54	-32.3
RANGE HIGH		9.08	58.3		9.92	66.7	3.21	29.2		14.57	95.7		14.82	92.9	3.12	49.6

*Raw Scores

GRADE 6

Raw Score Means and Percent Masters

Test G12--Dewey Decimal System

Number of Items-18

School	Spring 1972			Spring 1973			1972-73 Change	
	N	RS*	%M	N	RS	%M	RS	%M
1	23	13.61	34.8	24	13.29	45.8	-.32	11.0
2	28	13.54	39.3	27	12.44	18.5	-1.10	-20.8
3	19	12.58	36.8	34	13.76	52.9	1.18	16.1
4	18	11.33	27.8	18	13.56	38.9	2.23	11.1
6	28	10.89	17.9	19	10.16	15.8	-.73	-2.1
7	25	12.92	36.0	30	12.90	33.3	-.02	-2.7
8	32	13.06	31.3	29	13.17	44.8	.11	13.5
9	27	14.52	63.0	19	14.53	63.2	.01	0.2
10	29	12.41	31.0	29	13.52	37.9	1.11	6.9
11	26	14.35	65.4	30	15.57	80.0	1.22	14.6
12	18	14.11	55.6	19	14.37	42.1	.26	-13.5
13	30	14.17	53.3	26	13.19	42.3	-.98	-11.0
15	18	12.72	22.2	23	14.30	56.5	1.58	34.3
21	24	12.79	29.2	30	13.97	46.7	1.18	17.5
22	28	14.00	28.6	28	13.36	39.3	-.64	10.7
23		---			---		---	
32	26	13.85	53.8	33	13.15	39.4	-.70	-14.4
AVERAGE		13.18	36.8		13.45	41.0	.27	4.2
RANGE LOW		10.89	17.9		10.16	15.8	-1.10	-20.8
RANGE HIGH		14.52	65.4		15.57	80.0	2.23	34.3

*Raw Scores

APPENDIX J

Comparative Performance on Standardized Achievement Tests of Pupils in Schools with Typical Performance below Grade Level Participating in the Map, Graph and Table Subareas of Study Skills Field Test, 1971-73

COMPREHENSIVE TESTS OF BASIC SKILLS, FORM Q LEVEL 1
Test 9-Using Reference and Graphic Materials
Raw Score Means, (Percentile Ranks, [1] Grade Equivalents[2])
Number of items - 30

GRADE 3

School	Fall '71	Fall '72	'71-'72 Change	Fall '73	'72-'73 Change	'71-'73 Change
	N	N		N		
16	24 8.21 (25, 2.1)	27 10.57 (45, 2.7)	2.46 (20, .6)	22 13.32 (57, 3.0)	2.65 (12, .3)	5.11 (32, .9)
17	27 9.56 (39, 2.5)	26 10.46 (39, 2.5)	.90 (0, .0)	26 17.23 (75, 3.6)	6.77 (36, 1.1)	7.67 (36, 1.1)
18	25 8.96 (32, 2.3)	28 16.64 (75, 3.6)	7.68 (43, 1.3)	26 9.04 (32, 2.3)	-7.60 (-43, -1.3)	.08 (0, .0)
19	21 9.62 (39, 2.5)	27 12.26 (51, 2.9)	2.64 (12, .4)	28 12.14 (51, 2.9)	-.12 (0, .0)	2.52 (12, .4)
20	30 10.90 (45, 2.7)	31 20.10 (85, 4.2)	9.20 (40, 1.5)	30 9.67 (39, 2.5)	-10.43 (-46, -1.7)	-1.23 (-6, -.2)
Average	9.45 (32, 2.3)	14.03 (61, 3.2)	4.58 (29, .9)	12.28 (51, 2.9)	-1.75 (-10, -.3)	2.83 (19, .6)
Range Low	8.21 (25, 2.1)	10.46 (39, 2.5)	.90 (0, .0)	9.04 (32, 2.3)	-10.43 (-46, -1.7)	-1.23 (-6, -.2)
Range High	10.90 (45, 2.7)	20.10 (85, 4.2)	9.20 (43[a], 1.5)	17.23 (75, 3.6)	6.77 (36, 1.1)	7.67 (36, 1.1)

GRADE 4

School	Fall '71	Fall '72	'71-'72 Change	Fall '73	'72-'73 Change	'71-'73 Change
	N	N		N		
16	25 11.88 (25, 2.9)	26 14.35 (33, 3.2)	2.47 (8, .3)	20 13.40 (29, 3.0)	-.95 (-4, -.2)	1.52 (4, .1)
17	29 14.41 (33, 3.2)	30 16.30 (41, 3.5)	1.89 (8, .3)	28 16.86 (46, 3.6)	.56 (5, .1)	2.45 (13, .4)
18	27 9.85 (18, 2.5)	30 14.37 (33, 3.2)	4.52 (15, .7)	28 18.21 (50, 3.8)	3.84 (17, .6)	8.36 (32, 1.3)
19	19 17.11 (46, 3.6)	19 16.21 (41, 3.5)	-.90 (-5, -.1)	21 19.33 (54, 4.0)	3.12 (13, .5)	2.22 (8, .4)
20	28 14.29 (33, 3.2)	29 16.21 (41, 3.5)	1.92 (8, .3)	30 17.27 (46, 3.6)	1.06 (5, .1)	2.98 (13, .4)
Average	13.51 (33, 3.2)	15.49 (37, 3.3)	1.98 (4, .1)	17.01 (46, 3.6)	1.52 (9, .3)	3.50 (13, .4)
Range Low	9.85 (18, 2.5)	14.35 (33, 3.2)	-.90 (-5, -.1)	13.40 (29, 3.0)	-.95 (-4, -.2)	1.52 (4, .1)
Range High	17.11 (46, 3.6)	16.30 (41, 3.5)	4.52 (15, .7)	19.33 (54, 4.0)	3.84 (17, .6)	8.36 (32, 1.3)

[1] Large city norms [2] Regular norms [a] Here the highest raw score change did not create the highest %-ile rank change.

COMPREHENSIVE TESTS OF BASIC SKILLS, FORM Q LEVEL 2
Test 10-Using Graphic Materials
Raw Score Means, (Percentile Ranks,[1] Grade Equivalents[2])
Number of items-30

GRADE 5

School	Fall '71	Fall '72	'71-'72 Change	Fall '73	'72-'73 Change	'71-'73 Change
	N	N		N		
16	26 12.27 (36, 4.0)	29 10.31 (26, 3.5)	-1.96 (-10, -.5)	22 14.32 (46, 4.4)	4.01 (20, .9)	2.05 (10, .4)
17	28 12.14 (36, 4.0)	27 15.67 (55, 4.8)	3.53 (19, .8)	26 15.81 (55, 4.8)	.14 (0, .0)	3.67 (19, .8)
18	25 11.12 (31, 3.8)	29 14.21 (46, 4.4)	3.09 (15, .6)	27 12.30 (36, 4.0)	-1.91 (-10, -.4)	1.18 (5, .2)
19	27 13.23 (41, 4.2)	14 16.71 (59, 5.0)	3.48 (18, .8)	18 13.89 (46, 4.4)	-2.82 (-13, -.6)	.66 (5, .2)
20	29 10.97 (31, 3.8)	27 13.41 (41, 4.2)	2.44 (10, .4)	30 13.87 (46, 4.4)	.46 (5, .2)	2.90 (15, .6)
Average	11.95 (36, 4.0)	14.06 (46, 4.4)	2.11 (10, .4)	14.04 (46, 4.4)	-.02 (0, .0)	2.09 (10, .4)
Range Low	10.97 (31, 3.8)	10.31 (26, 3.5)	-1.96 (-10, -.5)	12.30 (36, 4.0)	-2.82 (-13, -.6)	.66 (5, .2)
Range High	13.23 (41, 4.2)	16.71 (59, 5.0)	3.53 (19, .8)	15.81 (55, 4.8)	4.01 (20, .9)	3.67 (19, .8)

GRADE 6

School	Fall '71	Fall '72	'71-'72 Change	Fall '73	'72-'73 Change	'71-'73 Change
	N	N		N		
16	22 11.55 (21, 4.0)	30 13.83 (28, 4.4)	2.28 (7, .4)	21 14.29 (28, 4.4)	.46 (0, .0)	2.74 (7, .4)
17	33 15.88 (36, 4.8)	29 16.38 (36, 4.8)	.50 (0, .0)	25 18.28 (44, 5.2)	1.90 (8, .4)	2.40 (8, .4)
18	25 13.32 (25, 4.2)	31 15.74 (36, 4.8)	2.42 (11, .6)	27 18.67 (48, 5.4)	2.93 (12, .6)	5.35 (23, 1.2)
19	26 17.31 (40, 5.0)	27 17.04 (40, 5.0)	-.27 (0, .0)	21 13.81 (48, 5.4)	1.77 (8, .4)	1.50 (8, .4)
20	31 15.74 (36, 4.8)	30 15.93 (36, 4.8)	.19 (0, .0)	29 16.69 (40, 5.0)	.76 (4, .2)	.95 (4, .2)
Average	14.76 (32, 4.6)	15.78 (36, 4.8)	1.02 (4, .2)	17.35 (40, 5.0)	1.57 (4, .2)	2.59 (8, .4)
Range Low	11.55 (21, 4.0)	13.83 (28, 4.4)	-.27 (0, .0)	14.29 (28, 4.4)	.46 (0, .0)	.95 (4, .2)
Range High	17.31 (40, 5.0)	17.04 (40, 5.0)	2.42 (11, .6)	18.81 (48, 5.4)	2.93 (12, .6)	5.35 (23, 1.2)

[1] Large city norms [2] Regular norms

APPENDIX K

Comparative Performance on Standardized Achievement Tests of Pupils in Schools with Typical Performance below Grade Level Participating in the Reference Skills Subarea of Study Skills Field Test, 1972-73

RAW SCORE MEANS, PERCENTILE RANKS[1], and GRADE EQUIVALENTS[2]
Comprehensive Tests of Basic Skills, Form Q Level 2
Study Skills Test 9 - Using Reference Materials
Number of Items - 20

GRADE 5

School	Spring, 1972				Spring, 1973				1972-73 Change		
	N	Raw Score	%-ile Rank	Grade Equiv.	N	Raw Score	%-ile Rank	Grade Equiv.	Raw Score	%-ile Rank	Grade Equiv.
16	24	6.58	24	3.9	27	6.74	24	3.9	.16	0	.0
17	27	8.70	37	4.6	26	10.12	44	5.0	1.42	7	.4
18	27	5.85	17	3.4	26	14.73	79	7.3	8.88	62	3.9
19	27	9.44	37	4.6	27	11.78	57	5.7	2.34	20	1.1
20	27	7.70	30	4.3	30	8.90	37	4.6	1.20	7	.3
AVERAGE		7.65	30	4.3		10.45	44	5.0	2.80	14	.7
RANGE LOW		5.85	17	3.4		6.74	24	3.9	.16	0	.0
RANGE HIGH		9.44	37	4.6		14.73	79	7.3	8.88	62	3.9

GRADE 6

School	Spring, 1972				Spring, 1973				1972-73 Change		
	N	Raw Score	%-ile Rank	Grade Equiv.	N	Raw Score	%-ile Rank	Grade Equiv.	Raw Score	%-ile Rank	Grade Equiv.
16	27	8.52	23	4.6	26	9.35	23	4.6	.83	0	.0
17	25	7.68	18	4.3	27	10.78	34	5.4	3.10	16	1.1
18	27	10.52	34	5.4	30	13.00	48	6.2	2.48	14	.8
19	18	9.11	23	4.6	26	9.69	28	5.0	.58	5	.4
20	28	9.32	23	4.6	30	10.90	34	5.4	1.58	11	.8
AVERAGE		9.03	23	4.6		10.74	34	5.4	1.71	11	.8
RANGE LOW		7.68	18	4.3		9.35	23	4.6	.58	0	.0
RANGE HIGH		10.52	34	5.4		13.00	48	6.2	3.10	16	1.1

[1]Large city norms

[2]Regular norms

APPENDIX L

Comparative Performance on Standardized Achievement Tests of Pupils in Schools with Typical Performance at or above Grade Level Participating in the Map, Graph and Table Subareas of Study Skills Field Test, 1971-72

GRADE 3

RAW SCORE MEANS, PERCENTILE RANKS, AND GRADE EQUIVALENTS

Iowa Tests of Basic Skills, Form 6 Level 9

Test W-1: Map Reading

Number of Items-27

School	Fall, 1971				Fall, 1972				1971-72 Change		
	N	Raw Score	%-ile Rank	Grade Equiv.*	N	Raw Score	%-ile Rank	Grade Equiv.*	Raw Score	%-ile Rank	Grade Equiv.
1	24	10.54	60	3.3	25	13.36	89	3.7	2.82	29	.4
2	20	10.45	44	3.1	24	14.50	98	4.1	4.05	54	1.0
3	24	10.04	44	3.1	17	11.24	60	3.3	1.20	16	.2
4	24	12.37	76	3.5	25	12.16	76	3.5	-.21	0	.0
6	20	11.65	76	3.5	18	10.67	60	3.3	-.98	-16	-.2
7	18	10.39	44	3.1	25	12.12	76	3.5	1.73	32	.4
8	23	11.57	76	3.5	25	10.52	60	3.3	-1.05	-16	-.2
9	23	16.17	99+	4.3	26	15.31	98	4.1	-.86	-1	-.2
10	21	13.52	95	3.9	22	13.14	89	3.7	-.38	-6	-.2
11	25	17.36	99+	4.5	24	15.25	98	4.1	-2.11	-1	-.4
12	24	12.46	76	3.5	21	15.24	98	4.1	2.78	22	.6
13	23	11.87	76	3.5	25	12.76	89	3.7	.89	13	.2
15	19	13.63	95	3.9	21	11.90	76	3.5	-1.73	-19	- 4
21	24	11.63	76	3.5	25	15.12	98	4.1	3.49	22	.6
22	23	12.65	89	3.7	24	10.87	60	3.3	-1.78	-29	-.4
23	25	15.40	98	4.1	26	13.54	95	3.9	-1.86	-3	-.2
32	20	17.10	99+	4.5	24	14.79	98	4.1	-2.31	-1	-.4
AVERAGE		12.87	89	3.7		13.09	89	3.7	.22	0	.0
RANGE LOW		10.04	44	3.1		10.52	60	3.3	-2.31	-29	-.4
RANGE HIGH		17.36	99+	4.5		15.31	98	4.1	4.05	54	1.0

*A grade equivalent of 3.2 should be used as a base for comparison.

GRADE 3

RAW SCORE MEANS, PERCENTILE RANKS, AND GRADE EQUIVALENTS

Iowa Tests of Basic Skills, Form 6 Level 9

Test W-2: Reading Graphs and Tables

Number of Items-20

School	Fall, 1971				Fall, 1972				1971-72 Change		
	N	Raw Score	%-ile Rank	Grade Equiv.*	N	Raw Score	%-ile Rank	Grade Equiv.	Raw Score	%-ile Rank	Grade Equiv.
1	24	9.96	67	3.4	25	12.16	92	3.8	2.20	25	.4
2	20	8.00	27	2.9	24	12.12	92	3.8	4.12	65	.9
3	24	8.46	27	2.9	17	8.71	43	3.1	.25	16	.2
4	24	10.83	82	3.6	25	11.56	92	3.8	.73	10	.2
6	20	9.75	67	3.4	18	10.11	67	3.4	.36	0	.0
7	18	9.44	43	3.1	25	11.04	82	3.6	1.60	39	.5
8	23	9.48	43	3.1	25	9.32	43	3.1	-.16	0	.0
9	23	12.91	97	4.0	26	13.38	97	4.0	.47	0	.0
10	21	11.95	92	3.8	22	11.00	82	3.6	-.95	-10	-.2
11	25	12.88	97	4.0	24	12.58	97	4.0	-.30	0	.0
12	24	10.67	82	3.6	21	13.76	99+	4.3	3.09	17	.7
13	23	9.09	43	3.1	25	9.60	67	3.4	.51	24	.3
15	19	11.11	82	3.6	21	10.57	82	3.6	-.54	0	.0
21	24	9.08	43	3.1	25	11.04	82	3.6	1.96	39	.5
22	23	11.35	82	3.6	24	10.42	67	3.4	-.93	-15	-.2
23	25	13.12	97	4.0	26	11.81	92	3.8	-1.31	-5	-.2
32	20	13.30	97	4.0	24	12.37	92	3.8	-.93	-5	-.2
AVERAGE		10.67	82	3.6		11.27	82	3.6	.60	0	.0
RANGE LOW		8.00	27	2.9		8.71	43	3.1	-1.31	-15	-.2
RANGE HIGH		13.30	97	4.0		13.76	99+	4.3	4.12	6[illegible]	.9

*A grade equivalent of 3.2 should be used as a base for comparison.

GRADE 4

RAW SCORE MEANS, PERCENTILE RANKS, AND GRADE EQUIVALENTS

Iowa Tests of Basic Skills, Form 6 Level 10

Test W-1: Map Reading

Number of Items-32

School	Fall, 1971				Fall, 1972				1971-72 Change		
	N	Raw Score	%-ile Rank	Grade Equiv.*	N	Raw Score	%-ile Rank	Grade Equiv.*	Raw Score	%-ile Rank	Grade Equiv.
1	19	13.11	44	4.1	20	15.75	86	4.7	2.64	42	.6
2	20	9.95	8	3.4	24	12.71	44	4.1	2.76	36	.7
3	22	15.95	86	4.7	22	15.50	86	4.7	-.45	0	.0
4	19	17.21	93	4.9	22	17.55	96	5.0	.34	3	.1
6	20	15.15	74	4.5	17	15.00	74	4.5	-.15	0	.0
7	24	15.63	86	4.7	20	14.70	74	4.5	-.93	-12	-.2
8	21	17.05	93	4.9	17	14.18	58	4.3	-2.87	-35	-.6
9	20	15.75	86	4.7	20	14.85	74	4.5	-.90	-12	-.2
10	23	16.09	86	4.7	24	15.50	86	4.7	-.59	0	.0
11	21	19.67	99+	5.4	22	20.23	99+	5.4	.56	0	.0
12	20	14.25	58	4.3	21	15.90	86	4.7	1.65	28	.4
13	24	15.21	74	4.5	23	15.39	74	4.5	.18	0	.0
15	17	15.82	86	4.7	16	17.75	96	5.0	1.93	10	.3
21	23	16.04	86	4.7	25	14.72	74	4.5	-1.32	-12	-.2
22	19	16.63	93	4.9	21	16.81	93	4.9	.18	0	.0
23	17	15.82	86	4.7	22	19.27	98	5.2	3.45	12	.5
32	31	20.71	99+	5.7	25	20.36	99+	5.4	-.35	0	-.3
AVERAGE		15.88	86	4.7		16.25	86	4.7	.37	0	.0
RANGE LOW		9.95	8	3.4		12.71	44	4.1	-2.87	-35	-.6
RANGE HIGH		20.71	99+	5.7		20.36	99+	5.4	3.45	42	.7

*A grade equivalent of 4.2 should be used as a base for comparison.

GRADE 4

RAW SCORE MEANS, PERCENTILE RANKS, AND GRADE EQUIVALENTS

Iowa Tests of Basic Skills, Form 6 Level 10

Test W-2: Reading Graphs and Tables

Number of Items-24

School	Fall, 1971				Fall, 1972				1971-72 Change		
	N	Raw Score	%-ile Rank	Grade Equiv.*	N	Raw Score	%-ile Rank	Grade Equiv.	Raw Score	%-ile Rank	Grade Equiv.
1	19	12.42	52	4.2	20	12.80	68	4.4	.38	16	.2
2	20	12.95	68	4.4	24	11.50	52	4.2	-1.45	-16	-.2
3	22	11.77	52	4.2	22	11.95	52	4.2	.18	0	.0
4	19	14.47	85	4.7	22	14.91	95	5.0	.44	10	.3
6	20	12.10	52	4.2	17	13.35	68	4.4	1.25	16	.2
7	24	13.33	68	4.4	20	13.50	85	4.7	.17	17	.3
8	21	12.71	68	4.4	17	13.82	85	4.7	1.11	17	.3
9	20	12.65	68	4.4	20	13.55	85	4.7	.90	17	.3
10	23	12.17	52	4.2	24	12.54	68	4.4	.37	16	.2
11	21	15.05	95	5.0	22	14.91	95	5.0	-.14	0	.0
2	20	10.60	22	3.8	21	11.95	52	4.2	1.35	30	.4
13	24	14.00	85	4.7	23	12.74	68	4.4	-1.26	-17	-.3
15	17	13.71	85	4.7	16	14.44	85	4.7	.73	0	.0
21	25	14.09	85	4.7	25	12.32	52	4.2	-1.77	-33	-.5
22	19	13.42	68	4.4	21	12.29	52	4.2	-1.13	-16	-.2
23	17	13.29	68	4.4	22	15.32	95	5.0	2.03	27	.6
32	31	15.65	99	5.3	25	15.24	95	5.0	-.41	-4	-.3
AVERAGE		13.20	68	4.4		13.36	68	4.4	.16	0	.0
RANGE LOW		10.60	22	3.8		11.50	52	4.2	-1.77	-33	-.5
RANGE HIGH		15.65	99	5.3		15.32	95	5.0	2.03	30	.6

*A grade equivalent of 4.2 should be used as a base for comparison.

GRADE 5

RAW SCORE MEANS, PERCENTILE RANKS, AND GRADE EQUIVALENTS

Iowa Tests of Basic Skills, Form 6 Level 11

Test W-1: Map Reading

Number of Items-36

School	Fall, 1971				Fall, 1972				1971-72 Change		
	N	Raw Score	%-ile Rank	Grade Equiv.*	N	Raw Score	%-ile Rank	Grade Equiv.*	Raw Score	%-ile Rank	Grade Equiv.
1	22	17.45	64	5.4	21	18.24	77	5.6	.79	13	.2
2	25	12.60	18	4.6	25	18.16	77	5.6	5.56	59	1.0
3	28	17.89	77	5.6	23	20.22	91	5.9	2.33	14	.3
4	25	17.80	77	5.6	17	20.59	96	6.1	2.79	19	.5
6	23	17.13	64	5.4	18	19.83	91	5.9	2.70	27	.5
7	21	17.95	77	5.6	26	19.58	91	5.9	1.63	14	.3
8	24	17.67	64	5.4	23	19.00	82	5.7	2.33	18	.3
9	24	19.71	91	5.9	25	17.36	64	5.4	-2.35	-27	-.5
10	23	18.22	77	5.6	23	19.13	82	5.7	.91	5	.1
11	25	19.00	82	5.7	23	20.52	96	6.1	1.52	14	.4
12	22	18.95	82	5.7	18	18.56	82	5.7	-.39	0	.0
13	23	20.65	96	6.1	25	18.08	77	5.6	-2.57	-19	-.5
15	19	19.47	82	5.7	17	18.00	77	5.6	-1.47	-5	-.1
21	25	18.00	77	5.6	24	18.92	82	5.7	.92	5	.1
22	25	18.08	77	5.6	16	18.06	77	5.6	-.02	0	.0
23	25	16.60	64	5.4	24	21.37	96	6.1	4.77	32	.7
32	27	22.52	99+	6.5	28	22.93	99+	6.5	.41	0	.0
AVERAGE		18.16	77	5.6		19.33	82	5.7	1.17	5	.1
RANGE LOW		12.60	18	4.6		17.36	64	5.4	-2.57	-27	-.5
RANGE HIGH		22.52	99+	6.5		22.93	99+	6.5	5.56	59	1.0

*A grade equivalent of 5.2 should be used as a base for comparison.

GRADE 5

RAW SCORE MEANS, PERCENTILE RANKS, AND GRADE EQUIVALENTS

Iowa Tests of Basic Skills, Form 6 Level 11

Test W-2: Reading Graphs and Tables

Number of Items-26

School	Fall, 1971				Fall, 1972				1971-72 Change		
	N	Raw Score	%-ile Rank	Grade Equiv.*	N	Raw Score	%-ile Rank	Grade Equiv.*	Raw Score	%-ile Rank	Grade Equiv.
1	22	12.50	67	5.4	21	12.86	67	5.4	.36	0	.0
2	25	12.12	46	5.1	25	13.52	82	5.7	1.40	36	.6
3	28	13.07	67	5.4	23	14.30	82	5.7	1.23	15	.3
4	25	14.20	82	5.7	17	15.35	91	5.9	1.15	9	.2
6	23	12.13	46	5.1	18	15.28	91	5.9	3.15	45	.8
7	21	11.90	46	5.1	26	16.00	95	6.1	4.10	49	1.0
8	24	12.50	67	5.4	23	11.39	26	4.8	-1.11	-41	-.6
9	24	14.33	82	5.7	25	12.12	46	5.1	-2.21	-36	-.6
10	23	14.61	91	5.9	23	14.00	82	5.7	-.61	-9	-.2
11	25	14.24	82	5.7	23	16.17	95	6.1	1.93	13	.4
12	22	11.91	46	5.1	18	13.11	67	5.4	1.20	21	.3
13	23	15.57	95	6.1	25	14.04	82	5.7	-1.53	-13	-.4
15	19	13.79	82	5.7	17	15.24	91	5.9	1.45	9	.2
21	25	13.84	82	5.7	24	15.21	91	5.9	1.37	9	.2
[illegible]	25	12.88	67	5.4	16	13.81	82	5.7	.93	15	.3
2[illegible]	25	14.64	91	5.9	24	17.29	98	6.4	2.65	7	.5
32	27	16.37	95	6.1	28	18.29	99+	6.6	1.92	4	.5
AVERAGE		13.56	82	5.7		14.59	91	5.9	1.03	9	.2
RANGE LOW		11.90	46	5.1		11.39	26	4.8	-2.21	-41	-.6
RANGE HIGH		16.37	95	6.1		18.29	99+	6.6	4.10	49	1.0

*A grade equivalent of 5.2 should be used as a base for comparison.

GRADE 6

RAW SCORE MEANS, PERCENTILE RANKS, AND GRADE EQUIVALENTS

Iowa Tests of Basic Skills, Form 6 Level 12

Test W-1: Map Reading

Number of Items-40

School	Fall, 1971				Fall, 1972				1971-72 Change		
	N	Raw Score	%-ile Rank	Grade Equiv.*	N	Raw Score	%-ile Rank	Grade Equiv.	Raw Score	%-ile Rank	Grade Equiv.
1	24	18.87	88	6.9	25	19.00	88	6.9	.13	0	.0
2	24	16.96	67	6.5	24	17.83	79	6.7	.87	12	.2
3	18	16.56	67	6.5	30	19.23	88	6.9	2.67	21	.4
4	19	16.05	50	6.2	23	16.65	67	6.5	.60	17	.3
6	30	15.70	50	6.2	19	16.58	67	6.5	.88	17	.3
7	19	17.58	79	6.7	23	19.09	88	6.9	1.51	9	.2
8	23	17.43	67	6.5	22	15.64	50	6.2	-1.79	-17	-.3
9	18	19.89	93	7.1	23	19.83	93	7.1	-.06	0	.0
10	24	18.71	88	6.9	25	20.56	96	7.3	1.85	8	.4
11	25	19.92	93	7.1	22	19.32	88	6.9	-.60	-5	-.2
12	15	20.40	93	7.1	19	21.42	96	7.3	1.02	3	.2
13	25	18.92	88	6.9	20	18.05	79	6.7	-.87	-9	-.2
15	15	17.00	67	6.5	18	22.11	98	7.5	5.11	31	1.0
21	24	18.71	88	6.9	23	16.00	50	6.2	-2.71	-38	-.7
22		†	--	--		†	--	--	--	--	--
23		†	--	--		†	--	--	--	--	--
32	23	22.65	99+	7.7	29	19.83	93	7.1	-2.82	-6	-.6
AVERAGE		18.35	79	6.7		18.74	88	6.9	.39	9	.2
RANGE LOW		15.70	50	6.2		15.64	50	6.2	-2.82	-38	-.7
RANGE HIGH		22.65	99+	7.7		22.11	98	7.5	5.11	31	1.0

†No data.
*A grade equivalent of 6.2 should be used as a base for comparison.

GRADE 6

RAW SCORE MEANS, PERCENTILE RANKS, AND GRADE EQUIVALENTS

Iowa Tests of Basic Skills, Form 6 Level 12

Test W-2: Reading Graphs and Tables

Number of Items-28

School	Fall, 1971				Fall, 1972				1971-72 Change		
	N	Raw Score	%-ile Rank	Grade Equiv.*	N	Raw Score	%-ile Rank	Grade Equiv.*	Raw Score	%-ile Rank	Grade Equiv.
1	24	15.54	89	6.9	25	15.76	89	6.9	.22	0	.0
2	24	15.42	77	6.6	24	12.79	47	6.1	-2.63	-30	-.5
3	18	13.67	66	6.4	30	14.87	77	6.6	1.20	11	.2
4	19	10.74	15	5.5	23	14.83	77	6.6	4.09	62	1.1
6	30	12.30	27	5.8	19	12.58	47	6.1	.28	20	.3
7	19	14.74	77	6.6	23	17.35	95	7.2	2.61	18	.6
8	23	16.65	95	7.2	22	13.68	66	6.4	-2.97	-29	-.8
9	18	14.56	77	6.6	23	15.09	77	6.6	.53	0	.0
10	24	14.46	66	6.4	25	16.32	89	6.9	1.86	23	.5
11	25	17.04	95	7.2	22	16.82	95	7.2	-.22	0	.0
12	15	15.80	89	6.9	19	15.53	89	6.9	-.27	0	.0
13	25	12.80	47	6.1	20	14.35	66	6.4	1.55	19	.3
15	15	12.20	27	5.8	18	16.89	95	7.2	4.69	68	1.4
21	24	14.62	77	6.6	23	12.04	27	5.8	-2.58	-50	-.8
22		†	--	--		†	--	--	--	--	--
23		†	--	--		†	--	--	--	--	--
32	23	17.30	95	7.2	29	17.00	95	7.2	-.30	0	.0
AVERAGE		14.52	77	6.6		15.06	77	6.6	.54	0	.0
RANGE LOW		10.74	15	5.5		12.04	27	5.8	-2.97	-50	-.8
RANGE HIGH		17.30	95	7.2		17.35	95	7.2	4.69	68	1.4

†No data.

*A grade equivalent of 6.2 should be used as a base for comparison.

APPENDIX M

Comparative Performance on Standardized Achievement Tests of Pupils in Schools with Typical Performance at or above Grade Level Participating in the Reference Skills Subarea of Study Skills Field Test, 1972-73

GRADE 3

RAW SCORE MEANS, PERCENTILE RANKS, AND GRADE EQUIVALENTS

Iowa Tests of Basic Skills, Form 6 Level 9

Test W-3: Knowledge and Use of Reference Materials

Number of items - 42

School	Spring, 1972				Spring, 1973				1972-73 Change		
	N	Raw Score	%-ile Rank	Grade Equiv.	N	Raw Score	%-ile Rank	Grade Equiv.	Raw Score	%-ile Rank	Grade Equiv.
1	25	20.56	43	3.7	25	25.44	83	4.2	4.88	40	.5
2	25	20.24	35	3.6	24	27.29	94	4.5	7.05	59	.9
3	22	23.95	69	4.0	17	19.29	27	3.5	-4.66	-42	-.5
4	23	24.09	69	4.0	23	23.70	69	4.0	-.39	0	.0
6	18	22.22	51	3.8	18	23.50	69	4.0	1.28	18	.2
7	24	24.29	69	4.0	25	22.60	60	3.9	-1.69	-9	-.1
8	22	22.50	60	3.9	22	19.95	35	3.6	-2.55	-25	-.3
9	24	22.50	60	3.9	25	25.56	87	4.3	3.06	27	.4
10	---	†	---	---	24	26.00	87	4.3	---	---	---
11	23	25.52	87	4.3	25	28.88	97	4.7	3.36	10	.4
12	23	24.09	69	4.0	23	24.17	69	4.0	.08	0	.0
13	24	18.92	27	3.5	25	19.44	27	3.5	.52	0	.0
15	19	21.95	51	3.8	22	23.59	69	4.0	1.64	18	.2
21	24	23.29	60	3.9	24	26.33	87	4.3	3.04	27	.4
22	23	23.09	60	3.9	25	19.12	27	3.5	-3.97	-33	-.4
23	23	25.48	83	4.2	24	25.17	83	4.2	-.31	0	.0
32	22	30.82	99	4.9	25	28.12	96	4.6	-2.70	-3	-.3
AVERAGE*		23.34	60	3.9		24.01	69	4.0	.67	9	.1
RANGE LOW		18.92	27	3.5		19.12	27	3.5	-4.66	-42	-.5
RANGE HIGH		30.82	99	4.9		28.88	97	4.7	7.05	59	.9

A grade equivalent of 3.8 should be used as a base for comparison

†No data

*Based on number of entries above

GRADE 4

RAW SCORE MEANS, PERCENTILE RANKS, AND GRADE EQUIVALENTS

Iowa Tests of Basic Skills, Form 6 Level 10

Test W-3: Knowledge and Use of Reference Materials

Number of items - 52

	Spring, 1972				Spring, 1973				1972-73 Change		
School	N	Raw Score	%-ile Rank	Grade Equiv.	N	Raw Score	%-ile Rank	Grade Equiv.	Raw Score	%-ile Rank	Grade Equiv.
1	24	24.67	40	4.7	25	25.08	40	4.7	.41	0	.0
2	24	22.67	26	4.5	22	31.18	86	5.4	8.51	60	.9
3	20	26.00	47	4.8	24	25.12	40	4.7	-.88	-7	-.1
4	25	26.00	47	4.8	24	26.75	64	5.0	.75	17	.2
6	18	26.61	64	5.0	22	27.45	64	5.0	.84	0	.0
7	21	26.67	64	5.0	25	27.16	64	5.0	.49	0	.0
8	24	25.75	47	4.8	23	28.43	72	5.1	2.68	25	.3
9	22	27.59	72	5.1	24	31.04	86	5.4	3.45	14	.3
10	25	29.84	83	5.3	25	27.56	72	5.1	-2.28	-11	-.2
11	25	28.48	72	5.1	25	34.36	97	5.8	5.88	25	.7
12	25	23.44	26	4.5	25	29.68	83	5.3	6.24	57	.8
13	23	24.61	40	4.7	23	27.65	72	5.1	3.04	32	.4
15	19	24.00	34	4.6	21	27.00	64	5.0	3.00	30	.4
21	22	27.27	64	5.0	25	25.60	47	4.8	-1.67	-17	-.2
22	23	27.65	72	5.1	25	31.60	94	5.6	3.95	22	.5
23	22	29.59	83	5.3	25	31.52	94	5.6	1.93	11	.3
32	32	32.81	96	5.7	24	34.83	98	5.9	2.02	2	.2
AVERAGE		26.69	64	5.0		28.94	78	5.2	2.25	14	.2
RANGE LOW		22.67	26	4.5		25.08	40	4.7	-2.28	-17	-.2
RANGE HIGH		32.81	96	5.7		34.83	98	5.9	8.51	60	.9

A grade equivalent of 4.8 should be used as a base for comparison

GRADE 5

RAW SCORE MEANS, PERCENTILE RANKS, AND GRADE EQUIVALENTS

Iowa Tests of Basic Skills, Form 6 Level 11

Test W-3: Knowledge and Use of Reference Materials

Number of items - 56

School	Spring, 1972				Spring, 1973				1972-73 Change		
	N	Raw Score	%-ile Rank	Grade Equiv.	N	Raw Score	%-ile Rank	Grade Equiv.	Raw Score	%-ile Rank	Grade Equiv.
1	21	38.57	93	6.7	23	32.96	73	6.2	-5.61	-20	-.5
2	21	31.14	60	6.0	24	30.75	60	6.0	-.39	0	.0
3	30	29.93	53	5.9	24	34.33	79	6.3	4.40	26	.4
4	21	30.52	60	6.0	24	35.29	84	6.4	4.77	24	.4
6	21	28.33	40	5.7	23	31.52	67	6.1	3.19	27	.4
7	---	†	---	---	23	34.78	84	6.4	---	---	---
8	22	27.45	35	5.6	25	31.12	60	6.0	3.67	25	.4
9	21	26.81	35	5.6	24	35.92	84	6.4	9.11	49	.8
10	23	33.87	79	6.3	25	36.56	88	6.5	2.69	9	.2
11	22	35.36	84	6.4	24	40.96	97	6.9	5.60	13	.5
12	24	31.00	60	6.0	24	28.62	46	5.8	-2.38	-14	-.2
13	24	29.04	46	5.8	25	27.68	40	5.7	-1.36	-6	-.1
15	19	37.05	88	6.5	20	29.00	46	5.8	-8.05	-42	-.7
21	24	26.58	35	5.6	24	32.29	67	6.1	5.71	32	.5
22	24	32.29	67	6.1	25	37.72	91	6.6	5.43	24	.5
23	20	32.95	73	6.2	22	43.77	99+	7.3	10.82	26	1.1
32	25	36.76	88	6.5	30	43.43	99	7.1	6.67	11	.6
AVERAGE*		31.73	67	6.1		34.51	84	6.4	2.78	17	.3
RANGE LOW		26.58	35	5.6		27.68	40	5.7	-8.05	-42	-.7
RANGE HIGH		38.57	93	6.7		43.77	99+	7.3	10.82	49	1.1

A grade equivalent of 5.8 should be used as a base for comparison

†No data

*Based on number of entries above

GRADE 6

RAW SCORE MEANS, PERCENTILE RANKS, AND GRADE EQUIVALENTS

Iowa Tests of Basic Skills, Form 6 Level 12

Test W-3: Knowledge and Use of Reference Materials

Number of items - 59

School	Spring, 1972				Spring, 1973				1972-73 Change		
	N	Raw Score	%-ile Rank	Grade Equiv.	N	Raw Score	%-ile Rank	Grade Equiv.	Raw Score	%-ile Rank	Grade Equiv.
1	24	38.00	81	7.4	23	39.17	84	7.5	1.17	3	.1
2	25	36.08	68	7.1	25	36.16	68	7.1	.08	0	.0
3	22	33.09	37	6.6	29	37.14	77	7.3	4.05	40	.7
4	20	32.95	37	6.6	20	34.65	62	7.0	1.70	25	.4
6	30	30.17	20	6.2	22	32.36	32	6.5	2.19	12	.3
7	---	†	---	---	---	†	---	---	---	---	---
8	22	37.32	77	7.3	24	34.62	62	7.0	-2.70	-15	-.3
9	23	37.13	77	7.3	21	35.67	68	7.1	-1.46	-9	-.2
10	24	34.29	49	6.8	24	36.04	68	7.1	1.75	19	.3
11	20	38.45	81	7.4	24	37.79	81	7.4	-.66	0	.0
12	17	37.53	81	7.4	21	35.29	62	7.0	-2.24	-19	-.4
13	25	34.92	62	7.0	25	32.36	32	6.5	-2.56	-30	-.5
15	17	31.59	32	6.5	19	39.89	90	7.7	8.30	58	1.2
21	24	30.12	20	6.2	25	36.44	68	7.1	6.32	48	.9
22	21	33.14	37	6.6	24	35.21	62	7.0	2.07	25	.4
23	---	†	---	---	---	†	---	---	---	---	---
32	23	33.04	37	6.6	23	39.87	90	7.7	6.83	53	1.1
AVERAGE		34.52	62	7.0		36.18	68	7.1	1.66	6	.1
RANGE LOW		30.12	20	6.2		32.36	32	6.5	-2.70	-30	-.5
RANGE HIGH		38.45	81	7.4		39.89	90	7.7	8.30	58	1.2

A grade equivalent of 6.8 should be used as a base for comparison
†No data

APPENDIX N

Projected Costs of Study Skills Based on Price Lists

PROJECTED COSTS*

(Given that there are 100 students per level at each level)

	Break-in Costs		Minimal Continuing Costs	
	Field Test	Commercial	Field Test	Commercial
LEVEL A - deleted in commercial				
Student Materials 1 pkg profile cards (A-D)	$ 5.00		$ 5.00	
Teacher Materials 5 Teacher's Planning Guides 1 Teacher's Resource File	22.50			
Total Materials	27.50			
LEVEL B (Nonreader) - commercial Level A				
Student Materials 3 pkg machine scorable booklets 1 set ditto masters** 1 pkg Pupil Profile cards**	$ 45.00	$ 34.50	$ 10.70	$ 12.00
Teacher Materials 5 Teacher's Planning Guides 1 Teacher's Resource File A-G 4 Test Administrator's Manuals	25.50	23.50		
Machine Scoring	40.00	40.00		
Total Materials	70.50	58.00		
Total Materials and Scoring	110.50	98.00		
LEVEL B (Reader) - commercial Level B				
Student Materials 3 pkg machine scorable booklets 1 set ditto masters** 1 pkg Pupil Profile cards**	$ 69.00	$ 58.50	$ 19.70	$ 16.00
Teacher Materials 5 Teacher's Planning Guides 1 Teacher's Resource File A-G 4 Test Administrator's Manuals	25.50	23.50		
Machine Scoring	50.00	50.00		
Total Materials	94.50	82.00		
Total Materials and Scoring	144.50	132.00		

*based on 1973-74 NCS price list

	Break-in Costs		Minimal Continuing Costs	
	Field Test	Commercial	Field Test	Commercial
LEVEL C				
Student Materials 3 pkg machine scorable booklets 3 pkg color maps booklets 1 pkg notebooks 1 pkg articles cards 1 set ditto masters** 1 pkg Pupil Profile Cards**	$ 133.75	100.25	34.70	27.00
Teacher Materials 5 Teacher's Planning Guides 1 Teacher's Resource File A-G 2 Test Administrator's Manuals	25.50	23.50		
Machine Scoring	85.00	60.00		
Total Materials	159.25	123.75		
Total Materials and Scoring	244.25	183.75		
LEVEL D				
Student Materials 3 pkg machine scorable booklets 3 pkg color maps booklets 1 pkg facts cards 1 set ditto masters** 1 pkg Pupil Profile cards D-G**	155.25	106.00	43.70	41.00
Teacher Materials 5 Teacher's Planning Guides 1 Teacher's Resource File A-G 1 Test Administrator's Manual	24.00	21.25		
Machine Scoring	95.00	65.00		
Total Materials	179.25	127.25		
Total Materials and Scoring	274.25	192.25		
LEVEL E				
Student Materials 3 pkg reusable test booklets 1 pkg machine scorable answer sheets 1 set ditto masters** 1 pkg Pupil Profile cards**	132.75	142.00	5.70	4.00
Teacher Materials 5 Teacher's Planning Guides 1 Teacher's Resource File A-G 1 Test Administrator's Manual	24.00	21.25		
Machine Scoring	50.00	30.00		
Total Materials	156.75	163.25		
Total Materials and Scoring	206.75	193.25		

	Break-in Costs		Minimal Continuing Costs	
	Field Test	Commercial	Field Test	Commercial
LEVEL F				
Student Materials 3 pkg reusable test booklets 1 pkg machine scorable answer sheets 1 set ditto masters** 1 pkg Pupil Profile cards**	$ 125.00	122.50	4.70	4.00
Teacher Materials	24.00	21.25		
Machine Scoring	50.00	30.00		
Total Materials	149.00	143.75		
Total Materials and Scoring	199.00	173.75		
LEVEL G				
Student Materials 3 pkg reusable test booklets 1 pkg machine scorable answer sheets 1 set ditto masters** 1 pkg Pupil Profile cards**	116.00	124.00	4.70	4.00
Teacher Materials	24.00	21.25		
Machine Scoring	50.00	30.00		
Total Materials	140.00	145.25		
Total Materials and Scoring	190.00	175.25		
TOTAL COST	$1,397.00	1,148.25	129.00	102.00
OVERALL PER PUPIL COST	$ 2.00	1.64	.18	.15

**Material needs for continuation will include at a minimum one set of ditto masters per level, one package of pupil profile cards for entering kindergarteners and one package of pupil profile cards for transfer students at the other levels.

APPENDIX O

Formative Evaluation: Reactions from the Field

I. General Reactions to the Study Skills Objectives

1. The Study Skills Program is considered too massive with overly general skills (especially in Reference skills) and too many obvious or minor skills.

2. The study skills vary considerably in difficulty; that is, for some skills most children in a group master the skill after one session while other skill groups require 3-4 weeks. This makes scheduling as was done for Word Attack inefficient if not almost impossible.

3. Some study skills in a particular strand at two levels can be mastered simultaneously.

4. Teachers are unfamiliar with and perhaps even uncommitted to the Study Skills objectives (unlike those in Word Attack, the Study Skills objectives are not generally known and accepted).

5. At least one teacher recommended eliminating the skills for which the only means of assessment was either a performance test or a teacher observation.

6. There appears to be a substantive gap between Level A and Level B skills. Kindergarten and first grade teachers reported in the first year of the field test that although students completed Level A they could not handle Level B. In the second year, when the Level B tests were split into the non-reader and the reader skills, teachers complained that the gap still existed.

7. One teacher commented that many Level A skills are motor skills rather than study skills and suggested eliminating them.

8. One teacher said that the Level A library skills are too easy for her kindergarteners.

9. Two teachers, from both urban and non-urban schools, observed that Levels E, F, and G include skills that are too sophisticated and unnecessary for the elementary school child.

II. Reactions to the Teacher's Planning Guide and Implementation Procedures

A. Content

1. The Teacher's Planning Guide does not include enough specific information, particularly practical examples, on how to integrate the Study Skills program with content areas, both in terms of objectives and of scheduling. (To remedy this situation an addenda to the Teacher's Planning Guide was written for the 1972-73 field test. The addenda was only partially successful in solving the problem.)

2. In some cases there was no implementation at kindergarten and grade 1. Most schools maintained that they preferred to concentrate on Word Attack at those levels and that the first grade curriculum is too crowded to admit the Study Skills program.

3. Many teachers expressed confusion about organizing for skill instruction. Organization and grouping procedures were often overlooked in the inservices. They suggested our providing more detailed examples in expanded inservice materials or that we provide a filmstrip which would show a model unit as it copes with common problems.

4. Much confusion about procedures for integrating Study Skills with content areas was expressed. More specific suggestions were requested.

5. A principal suggested that it may be a false assumption on the developer's part that the teachers themselves have mastered the Study Skills and that more provisions for teacher education should be made.

6. Many teachers expressed lack of familiarity with the local objectives for the content areas. Also, the objectives are seldom expressed behaviorally in text books, especially social studies ones.

7. The textbook or "unit" yearly schedule is seen as relatively fixed, so that students' skill needs at any one point in time do not necessarily correlate with the skills needed for a content area.

8. Upper grade staff particularly demonstrated a lack of experience with the mechanics of the Design, not having used Word Attack. In general they were less familiar with the concepts of cross-grade or even cross-class grouping.

9. Upper grade teachers complained that they do not have as much aide assistance as primary teachers.

10. Teachers did not teach clusters of skills when they existed.

B. Format and Usability

1. One teacher suggested printing the outline of objectives in the Teacher's Planning Guide in such a way that the phrases and numbers matching those for the skill as it appears on the skill card would be prominent.

2. Another teacher complained that the numbering system is unnecessarily confusing and makes it difficult to work with strands. She suggested that the skill numbers be made identical in the Teacher's Planning Guide, on the strands chart and on the profile card. If that is not feasible, she suggested that the numbers of Figures 3, 4, and 5 in the Teacher's Planning Guide could be changed to correspond to the numbers on the profile cards rather than the outline of skills and objectives.

III. Reactions to the Teacher's Resource Files

A. Content

1. A frequent complain was that the inserts in the Teacher's Resource File are skimpy both in number and in substance. Specifically mentioned were:

   B7 Single Column Tables
   C1 Picture Symbols
   C10 Multicolumn Tables
   D5 Scale; whole units
   D8 Circle graphs
   E3 Intermediate Directions
   F19 Main Ideas

2. Another fairly frequent complaint was that insert activities do not build up to the test, or that they are not as difficult as the tests. Specifically mentioned were:

   D2 Color Key
   D5 Scale; whole units
   Level B and C skills generally

3. At least four teachers suggested that the inserts should include or be set up as independent activities, including more questions for the students. They suggested using activities that involved tape cassettes, learning stations, and listening centers.

4. Although two teachers wanted more activities that make use of physical materials, another said she personally would not use this kind because of the inconvenience involved in collecting the necessary materials.

5. Two teachers complained that the maps in keyed commercial texts are often much too small to be useful, especially when duplicated.

6. Several teachers said that fewer texts and more library books should be keyed to the skills because often only one or two texts are adopted city wide.

7. One teacher felt too few mathematics texts were keyed for bar graph skills.

8. Specific comment on Level B: One teacher expressed that there was parental concern when the students could not read the Level B inserts.

9. Specific comment on Level D: The attendance information that is called for in activity 1 for skill #9 is not readily available according to one teacher.

10. Specific comment on Level E: Two teachers expressed that the table for skill #7 dealing with softball statistics was considered unadaptable to girls because it relies on actual attendance at or participation in

a game. It was suggested that in general similar activities for construction of tables supply more sets of numbers to work with.

11. Error in Level F (Skill #2, Activity 8, Item 7): The incognito Mr. X just drowned in the Atlantic (34 North and 58 West). Perhaps 34 South and 58 West (Buenos Aires) would be a more appropriate stopping place.

B. Usability

1. Some worksheets from which masters need to be made have an uneven distribution of ink and are even bare in spots. Specifically mentioned were worksheets for Level B, Skill 3, Activities 4 and 10 and Level G, Skill 2, Activity 1.

2. In line with comment #1, a teacher complained that the symbols on the activity sheets for Level B, Skill 3 do not reproduce well and requested that simpler symbols be devised.

3. One teacher praised the sturdiness and convenience of the resource file folders

IV. Comments on the Tests

A. General Reactions to Content and Format

1. Some teachers complained that the reading level on the tests in general is too high, and that the directions are too complex.

2. Teachers complained that they could not assess MG&T skill mastery reliably with just one form for break-in, pretesting, and posttesting.

3. The complaint was made that the tests are not well correlated with objectives. At least two teachers (Levels B & C) mentioned teaching for the test rather than for the objective.

4. Teachers suggested developing one placement test for all levels to eliminate break-in testing confusion.

5. According to some teachers, the recommended "break-in" levels in the Teacher's Planning Guide are inappropriate, especially for average and fast students.

6. Test questions are sometimes ambiguous and tricky, especially for slow readers.

7. One teacher questioned the assumption that a child who achieved a mastery rating on a test which he couldn't read and which the teachers read aloud to him has really mastered the skill. This reservation is caused by the fact that the child cannot later readily apply the skill independently.

8. Teachers said that the children enjoyed taking the map, graph and table tests.

9. One teacher suggested that a test, or recommendations for procedures to follow, should be devised for "review" testing; that is, after a year or

two's instruction, this test would be used to check on retention.

10. A couple teachers felt that the vocabulary used in test questions does not agree with that used in resource file activities.

11. Numerous complaints were received that the print (and pictures) is too small and pages too crowded which is difficult to read and which causes blurriness when duplicated. This problem is especially bad at Levels B-C and on tests where there are letters in circles.

12. Primary teachers felt that test pages should read left-right, left-right; not up-down, up-down.

13. Some preference was expressed for having the directions for the Teacher Observations and the Performance Tests in the group test manual.

14. Some upper level teachers said they would like "layovers" for hand-scoring the dittoed answer sheets.

B. Level A

1. The directions say the tests are used to determine each child's initial need for instruction, implying they should be given to all children before any instruction. Some teachers feel this is too time-consuming.

2. There was almost 100% mastery of all Level A skills at K: therefore, the tests did not really place the students in the program.

3. One teacher suggested an easy written test at Level A to help bridge the gap between A and B. Another was strongly opposed to a test at Level A on the grounds that it would take time away from enrichment activities.

4. Test 1, Positions of Objects: A request was made to change the directions so that when a child (and teacher) is moving rapidly from one task to the next, it's physically possible, e.g., steps 5 to 6. If the child tries--which is natural-- to put one hand below the ball while it is still in back of his head, he will probably be unable to follow the direction. Regarding task 1, it would be better to say "between your legs." Children appear to have problems with "between your feet."

5. Test 3, Measurement: distance: Numerous complaints on vague directions for #1, 2, 3, and 4 were heard. For example, in Item #1, do you place the penny closer to the cup than (you place the penny) to the nickel, or, do you place the penny closer to the cup than you place the nickel? Are one or two coins moved?

6. Test 4, Follows oral directions: It is not made obvious enough that only one direction is to be given at a time.

C. Level B

1. When K-1 students did successfully move on and complete non-reader Level B skills, they then reached a stalemate at the reader Level B skills, especially in posttesting. Teachers complained that even when the child

could successfully work on activities for the skill, they then had to read almost every word of the test to the student.

2. Almost all teachers who administered the Level B nonreader tests were unhappy with the format. The print size was criticized above all.

3. Mixed formats confused the children. For example, on Test 5 they read 1, 2, 3, 4 "vertically," while on Test 6 they had to track through the example A, B, C, D horizontally.

4. Test 1, Representation: Some teachers wanted to know why the test could not be given to groups of 4-6 students.

5. Test 2, Positions of objects: Children are confused by the up-down format of the test. Teachers prefer the questions to go from left to right.

6. Test 2, Sample and Item 1: Children have difficulty locating the circles belonging to the monkeys and the camels. Perhaps there should be fewer bars on the cage and the circles should be located on the monkeys.

7. Test 2, Item 3: General complaints were related to the blurriness of the beetles on the dittos.

8. Test 2, Item 4: Some feeling was expressed that "beside" could be diagonal objects also.

9. Test 2, Item 5: A teacher complained that the ground line in front of the tent makes the tree appear behind the tent.

10. Test 2, Item 8: A numerous complaint was that the term "over" confuses children. "Over" can mean both above and in a course leading to the other side of, across. The second definition is reinforced by activities (e.g., Level A, Activity 5) in the resource file. A teacher suggested changing the word "over" to "above". Another solution would be to change the picture so that it can include the concept of going over.

11. Test 2, Items 10, 11: Some students are confused by the fish they see as "partly under" (not to the left and not under) the shell.

12. Test 2, Item 13: A numerous complaint was that the art is too small and complex. Especially on dittos, the faces and feet are blurred and it is difficult to tell which way the clowns are going.

13. Test 3, Item 14: A teacher questioned the position of the middle top tree which confuses the children.

14. Test 3, Picture Grid: Two teachers complained that format of the test is altogether too complex for children. The pictures are too small and close together and the use of many questions for the same grid confuses children.

15. Test 4, Measurement: size: The shading is too light according to at least one teacher.

16. Test 4, Item 12: Some teachers complained about the art. Two ribbons seem to be equally wide, a fact which made it very difficult for children to pick the correct answer.

17. Test 5, Measurement: distance, Item 7: Some children confuse the two types of stars and see the longest path as going around the boat.

18. Tests 6 and 7, Picture graphs and Single column tables: According to at least one teacher, students at this level are not accustomed to reading words written all in caps, as on these graphs.

19. Test 8, Group oral directions: At least seven teachers found the directions confusing, the letters hard to find, the print and pictures too small, and the page altogether too cluttered.

20. Test 15, Sequence: pictures, words: Numerous complaints were heard regarding this test. The directions were poorly worded. For example, the picture shows an empty tuffet and not Miss Muffet being frightened away which is what the children are asked to identify. The format is also rather confusing. Children are really asked to follow two-step directions on this test, instead of concentrating on sequence. The choice of stories also presented problems, in as much as the stories are commonly known, but uncommon versions are selected, i.e., Red Riding Hood. To sum up, children who teachers felt understand sequence could not handle the test.

21. Test 15: Additional complaints were that the format using two rows of answer circles per one row of pictures is confusing. These teachers would prefer a new row of pictures each time.

22. Test 16: Classifies ideas: The comment was made that this is a very difficult test and that the examiner should be able to repeat each entire item.

D. Level C

1. A couple of teachers complained that the reading level on these tests is too high and that some of the concepts tested are too difficult for Grade 2 children.

2. A teacher questions the choice of blue print for the Level C tests because of possible blue color blindness in children.

3. Tests 1 and 2, Picture symbols and Semipictorial symbols: The directions indicating that the administrator can read all parts of the test are not obvious enough according to one teacher.

4. Test 1, Item 12: The "stores" do not look like stores. Inner city children interpret them as a gas station, an office building or school, and a house with a picture window. The drawing should be changed.

5. Test 7, Measurement: distance, Item 8: Kim can take different routes, each one involving different numbers of stop lights. A teacher suggested rephrasing the question by defining the route (as is done for Item #12).

6. Test 8, Picture graphs, Items 8-13: The homonym "Plains" confuses children. A teacher recommended changing the name of the airlines to "World."

7. Test 8, Item 13: Four children have 10 (or more) marbles. A teacher suggested changing the wording to "Who has only 10 marbles?" Another suggested the word "exactly."

8. Test 9, Bar graphs, Item 6: Teachers questioned the wording for this item: "Who jumped four feet?" Really, all of the children did; only Eve jumped exactly four feet.

9. Test 10, Multicolumn tables, Item 2: Milwaukee children didn't understand the word "treats." A teacher suggested selecting another word.

10. Test 16, Takes notes: Several teachers complained that this test is too frustrating and too difficult for Grade 2 children. The vocabulary was criticized as too difficult for Milwaukee children.

11. Test 16: The suggestion was made by at least two teachers that there should be 2-3 weeks before the second part of the test. Even after six days students obviously relied on memory according to one teacher.

12. Test 16: One teacher felt that the directions about which side of card to use with which answer sheet are not clear enough.

13. Test 18, Ideas: sequential order: Urban teachers felt that Item 8 where pupils are directed to make a valentine was rather tricky since many children do not understand how to make a valentine in the way specified.

14. Test 19, Judgments, conclusions: Urban teachers felt the directions were incomplete for the insect test. Children didn't know what the three body parts were: many thought a tail was one of the three, especially in Item 12. The test seemed to be testing general knowledge more than the ability to make judgments. Also, the terms such as "short", "thick" and "pointed" are all relative. Many pupils marked 3 and 5, because compared to some of the others, the beaks are short, thick, and pointed.

E. Level D

1. Tests 1, 2, and 9, Nonpictorial symbols, Color key, and Multicolumn tables: According to one teacher, the questions are too tricky for slower students.

2. Test 2, Item 15: A typographical error was made. The word should read "slippery."

3. Test 2: Especially in the key for the Pet Shop, the greens and oranges were singled out as hard to distinguish.

4. Test 2: The test does not seem to correlate well with the objective. The objective seems to imply that only one color (in three shades) will be

that used rather than many colors.

5. Test 9, Items 13-15: The conversion of quantities in the parenthese are too difficult according to one teacher.

6. Test 14, Encyclopedia: See references: One teacher expressed the feeling that the references which include parentheses, for example, "Rome (Gods & Goddesses)," are too hard for her children. Perhaps more examples like this should be included in the activities.

7. Test 24, Selects relevant materials: Some urban reading specialists felt this test assumes a general knowledge which their children may not possess. According to them it would be better to choose topics within the framework of reference more geared to the pupil's experience. For instance, the topic Waterways puzzled many who did not know what was meant by waterways (lakes, oceans, or water trails). Under the topic Moving Westward in Pioneer Times, Item 22, was a book, Makers of the Red Revolution. Some children asked if the Red referred to Indians. Certainly many pupils would think of Red as being related to Indians rather than to Communists.

8. Test 25, Checks facts: An error was noted. The facts card is identified as Test 26, but should be Test 25.

F. Level E

1. A teacher complained that all Level E tests are too long, especially Part I of Test 15 (Dictionary).

2. The urban teachers wondered if this really is supposed to be eventually used by fourth graders? It seemed quite difficult.

3. Test 2, Earth's grid: Children are confused when the two O's, especially for Item 9 are too close to one another. Also, letters on the broken line, for example, "Tin," Item 9, are confusing according to one teacher.

4. Test 7, Multicolumn tables: One teacher mentioned that her students can not do the fractional math required for this test.

5. Test 11, Card catalog, Example Y: An error was noted. Choice E is incorrect. The correct answer is D.

G. Level F

1. A teacher felt that students needed 5-7 minutes more than was alloted for each test except for Test 19, Takes notes: main ideas.

2. Test 5, Bar graphs, and Level G Tests 6 and 7, Bar graphs and Line graphs: The question for example B gets misinterpreted. 1970 is compared "to itself" across all graphs rather than to other dates each within the graph.

3. Test 2, Latitude - longitude: Two teachers felt that this is a poor test because the South Pole placement makes items 23-25 unnecessarily hard.

One teacher disliked the made-up names because, according to her, they prevented students from referring to actual maps.

4. Test 8, Schedules: One teacher said that her students do not know the term "matinee."

H. Level G

1. Test 7, Line graphs: Many teachers may not understand the objective. There is some tendancy to think that, for example, in Items 11-18, you can say something specific about the years 1938, 1942, etc. This is apparently an instructional objective problem with assessment implications.

V. Comments on Format and Usability of the Profile Cards

1. At least six teachers complained that the McBee cards with print on both sides were inconvenient and confusing. They preferred having the back side blank for comments. One school expressed a preference for the two-sided cards.

2. Many teachers complained about the confusion involved in handling two cards for Study Skills especially at Level D. One suggested color-coding the cards if creating a single card proves unfeasible.

3. A couple of teachers said that the new lightweight paper that is used for the cards won't survive the number of years a child is in elementary school.

4. Four teachers requested extra unlabeled holes for teacher specified objectives and a double set of labeled holes for review assessment of skills.

5. It was observed that if schools follow recommendations and check growth every semester or more often, there is not nearly enough room on the growth chart. Even if they check growth annually, there will not be enough room.

6. Space is needed for writing in hand-corrected "break-in" results. Although there are enough lines on the "label" for all group tests, there is not enough space for all of Level D and E if teachers wish to include teacher observation skills in a "break-in" status report.

7. One teacher expressed the comment that since M, G & T groups are usually separate from R groups, there should be two cards to separate the sets of subareas.

APPENDIX P

Formative Evaluation: Test Validation Results for the Field Test Edition of Study Skill

I. Summary Statistics: WTRSD

Study Skills, Map and Graph and Table Tests

Field Test Edition

Level B

Test	No. of Items	Mean	Mean as %	Standard Deviation	Hoyt r	Standard Error of Measurement	No. of Masters	% Mastering
2. Positions of Objects	15	10.88	73	3.02	.75	1.45	826	49.8
3. Picture Grid	12	8.77	73	3.71	.91	1.09	947	57.1
4. Measurement: Size	12	10.24	85	1.83	.69	.98	1014	61.1
5. Measurement: Distance	12	8.69	74	2.93	.80	1.26	809	48.8
6. Picture Graphs	14	10.32	74	3.36	.84	1.31	774	46.7
7. Tables	15	9.55	64	4.27	.87	1.46	698	42.1

all Grade 2, N = 1659

Level C

Test	No. of Items	Mean	Mean as %	Standard Deviation	Hoyt r	Standard Error of Measurement	No. of Masters	% Mastering
1. Picture Symbols	12	10.83	90	1.74	.73	.87	1497	84.8
2. Semipictorial Symbols	14	10.89	78	3.09	.82	1.28	978	55.4
3. Color Key	12	9.46	79	2.57	.79	1.12	1111	62.9
4. Street Grid	12	8.32	69	2.95	.79	1.29	733	41.5
6. Measurement: Size	15	10.80	72	3.66	.84	1.43	937	53.1
7. Measurement: Distance	15	9.64	64	3.26	.76	1.53	574	32.5
8. Picture Graphs	15	8.74	58	3.91	.84	1.49	549	31.1
9. Bar Graphs	12	10.04	84	2.84	.88	.94	1336	75.7
10. Multicolumn Tables	15	11.45	76	3.52	.85	1.31	1114	63.1

N = 1766

Level D

Test	No. of Items	Mean	Mean as %	Standard Deviation	Hoyt r	Standard Error of Measurement
1. Nonpictorial Symbols	14	12.07	86	1.97	.65	1.12
2. Color Key	15	12.46	83	2.92	.71	1.27
3. Number-Letter Grid	16	13.44	84	2.37	.70	1.26
4. Cardinal Directions	15	12.41	83	2.73	.77	1.27
5. Scale: Whole Units	13	9.82	76	2.74	.76	1.30
6. Picture Graphs	15	12.23	82	3.07	.84	1.19
7. Bar Graphs	15	12.93	86	2.60	.80	1.12
8. Circle Graphs	12	10.16	85	2.07	.75	.99
9. Multicolumn Tables	15	9.54	64	3.70	.84	1.44

all Grade 5, N = 890

Level E

Test	No. of Items	Mean	Mean as %	Standard Deviation	Hoyt r	Standard Error of Measurement	No. of Masters	% Mastering
1. Point and Line Symbols	15	12.23	82	2.53	.71	1.30	269	70
2. Earth's Grid	12	7.23	60	2.65	.79	1.15	106	27
3. Intermediate Directions	12	5.41	45	3.31	.80	1.41	60	16
4. Scale: Multiple Whole Units	12	8.24	69	3.15	.82	1.28	173	45
5. Picture Graphs	20	16.42	82	3.28	.80	1.43	281	73
6. Bar Graphs	20	16.06	80	3.45	.81	1.48	254	66
7. Multicolumn Tables	20	14.20	71	4.58	.86	1.66	180	47

all Grade 6, N = 386

Level F

Test	No. of Items	Mean	Mean as %	Standard Deviation	Hoyt r	Standard Error or Measurement	No. of Masters	% Mastering
1. Point, Line & Area Symbols	15	11.18	75	2.63	.65	1.51	54	54.5
2. Latitude-Longitude	25	9.67	39	6.86	.91	1.98	9	9.0
3. Compares Scales	12	6.97	58	2.37	.55	1.52	13	13.0
4. Scale: Fractional Units	16	8.18	51	3.86	.81	1.63	17	17.0
5. Bar Graphs	18	14.06	78	2.80	.69	1.52	50	50.5
6. Circle Graphs	12	11.01	92	1.46	.64	.84	90	90.9
7. Line Graphs	18	14.36	80	2.55	.68	1.40	54	54.5
8. Schedules	13	7.30	56	2.81	.69	1.50	11	11.0

N=99, tested up from Level E

Level G

Test	No. of Items	Mean	Mean as %	Standard Deviation	Hoyt r	Standard Error of Measurement	No. of Masters	% Mastering
1. Representation: Analysis	12	9.06	76	1.31	-.17	1.36	21	38.9
2. Representation: Synthesis	12	7.98	67	1.96	.48	1.36	14	25.9
3. Meridians - Parallels	14	7.59	54	3.45	.82	1.41	11	20.4
4. Location: Projections	18	12.48	69	3.68	.78	1.67	18	33.3
5. Inset Maps	12	9.72	81	1.88	.56	1.20	31	57.4
6. Bar Graphs	18	16.43	91	1.11	-.10	1.13	51	94.4
7. Line Graphs	18	14.81	82	2.21	.56	1.41	32	59.3
8. Schedules	13	6.50	50	1.98	.42	1.44	0	0.0

N = 54, tested up from Level F

II. Summary Statistics: WTRSD

Study Skills, Map and Graph and Table Tests

Field Test Edition

Level B

	Location 3	4	Measurement 5	Graphs 6	Tables 7	
2 - Position of Objects	52	42	50	52	50	Location
3 - Picture Grid	--	41	52	55	56	
4 - Measurement: Size		--	51	41	42	Measurement
5 - Measurement: Distance			--	57	55	
6 - Picture Graphs				--	69	Graphs
7 - Tables					--	Tables

N = 1659

Level C

	1	2	3	4	6	7	8	9	10	
		Representation		Location		Measurement		Graphs	Tables	
1 - Pictorial Symbols	--	61	58	52	56	49	40	49	53	
2 - Semipictorial Symbols		--	67	67	68	62	53	55	62	Representation
3 - Color Key			--	66	69	60	57	60	67	
4 - Street Grid				--	68	65	57	54	63	Location
6 - Measurement: Size					--	67	61	61	70	Measurement
7 - Measurement: Distance						--	58	55	63	
8 - Picture Graphs							--	53	64	Graphs
9 - Bar Graphs								--	70	
10 - Tables									--	Tables

N = 1766

Level D.

	1	2	3	4	5	6	7	8	9	
		Representation		Location	Measurement		Graphs		Tables	
1 - Nonpictorial Symbols	--	51	47	49	53	51	52	50	47	Representation
2 - Color Key		--	54	48	47	55	51	56	46	
3 - Number-Letter Grid			--	50	50	52	49	46	47	Location
4 - Cardinal Directions				--	48	47	45	44	44	
5 - Scale: Whole Units					--	62	59	55	58	Measurement
6 - Picture Graphs						--	63	63	56	
7 - Bar Graphs							--	64	56	Graphs
8 - Circle Graphs								--	53	
9 - Tables									--	Tables

N = 890

Level E

	Representation	Location		Measurement	Graphs		Tables	
	1	2	3	4	5	6	7	
1 - Symbols	--	44	41	54	60	58	56	Representation
2 - Grid		--	40	37	39	41	41	Location
3 - Directions			--	41	42	48	51	
4 - Scale				--	50	54	53	Measurement
5 - Picture Graphs					--	69	60	Graphs
6 - Bar Graphs						--	68	
7 - Tables							--	Tables

N = 386

III. Content and Skill Correlation Matrix: WTRSD

Study Skills, Graphs and Tables

Field Test Edition

Level E, Tests 5, 6, and 7

(N = 623)

Variable	1	2	3	4	5	6	7	8	9	10	11
1 Purpose	---										
2 Compare	.36	---									
3 Extract Directly	.32	.66	---								
4 Interpolate	.35	.54	.51	---							
5 Determine Differences	.40	.64	.71	.65	---						
6 Summary	.38	.46	.50	.41	.52	---					
7 Project	.41	.60	.62	.56	.75	.51	---				
8 Combine 1 and 6	.78	.50	.51	.46	.56	.86	.56	---			
9 Picture Graphs	.45	.66	.58	.78	.80	.55	.74	.61	---		
10 Bar Graphs	.51	.67	.72	.70	.81	.58	.78	.66	.70	---	
11 Multicolumn Tables	.38	.73	.85	.52	.84	.55	.77	.57	.62	.70	---

Variable	Total No. Items	No. Items/Graph Test
1	3	1 each
2	9	3 each
3	9	1, 3, 5
4	7	4, 3, 0
5	17	6, 5, 6
6	3	1 each
7	12	4, 4, 4
8	6	
9	20	-------
10	20	-------
11	20	-------

Level F

	Representation 1	Location 2	Measurement 3	4	5	Graphs 6	7	Schedules 8	
1 - Point, Line and Area Symbols	--								Representation
2 - Latitude-Longitude	39	--							Location
3 - Compares Scales	32	46	--						Measurement
4 - Scale: Fractional Units	19	39	45	--					
5 - Bar Graphs	24	37	48	34	--				
6 - Circle Graphs	15	30	23	27	45	--			Graphs
7 - Line Graphs	29	42	38	40	58	54	--		
8 - Schedules	35	32	40	33	49	15	39	--	Schedules

N = 99, tested up from Level E

Level G

	1	2	3	4	5	6	7	8	
	Representation		Location	Measurement		Graphs		Tables	
1 - Representation: Analysis	--								Representation
2 - Representation: Synthesis	32	--							
3 - Meridians - Parallels	06	29	--						Location
4 - Location: Projection	15	41	31	--					Measurement
5 - Inset Maps	18	39	31	46	--				
6 - Bar Graphs	32	12	06	12	25	--			Graphs
7 - Line Graphs	08	30	25	32	49	32	--		
8 - Schedules	09	19	24	25	29	31	34	--	Tables

N = 54 tested up from Level F

IV. Summary Statistics: WTRSD

Study Skills, Reference Skills

Field Test Edition

Schools With Reading Achievement at or Above Grade Level

Grade 1

No Tests

Grade 2

Wisconsin Tests of Reading Skill Development: Level B

Grade 3

Wisconsin Tests of Reading Skill Development: Level C

Level		No. of Items	Raw Score Mean	Mean % Correct
B 5	Measurement: distance	12	11.08	92.3
B 6	Picture graphs	14	13.11	93.6
B 7	Single-column tables	15	13.48	89.9
	Grade 4			
B 5	Measurement: distance	12	11.34	94.5
C 7	Measurement: distance	15	11.37	75.8
D 5	Scale: whole units	13	8.13	62.5
B 3	Picture grid	12	11.70	97.5
C 4	Street grid	12	10.01	83.4
D 3	Number: letter grid	16	12.90	80.6
B 6	Picture graphs	14	13.45	96.1
C 8	Picture graphs	15	10.74	71.6
D 6	Picture graphs	15	11.49	76.6

Grade 5

Wisconsin Tests of Reading Skill Development: Level D

Level			No. of Items	Raw Score Mean	Mean % Correct
C	10	Multicolumn tables	15	13.40	89.3
D	9	Multicolumn tables	15	8.58	57.2
E	7	Multicolumn tables	20	11.88	59.4

Grade 6

Wisconsin Tests of Reading Skill Development

D	1	Nonpictorical symbols	14	12.36	88.3
E	1	Point & line symbols	15	11.92	79.5
F	1	Point, line, area symbols	15	9.06	60.4

Wisconsin Tests of Reading Skill Development

D	5	Scale: whole units	13	10.34	73.8
E	4	Scale: mult. whole units	12	7.61	63.4
F	4	Scale: fractional units	16	6.21	38.8

Wisconsin Tests of Reading Skill Development

D	7	Bar graphs	15	13.44	89.6
E	6	Bar graphs	20	16.05	80.2
F	5	Bar graphs	18	13.50	75.0

Schools With Reading Achievement Below Grade Level

Grade 1

No tests

Grade 2

Wisconsin Tests of Reading Skill Development: Level B

Grade 3

Level		No. of Items	Raw Score Mean	Mean % Correct
N=267				
B 3	Picture grid	12	8.92	74.3
C 9	Bar graphs	12	7.95	66.2
C 10	Multicolumn tables	15	8.15	54.3
N=261				
B 5	Measurement: distance	12	9.03	75.2
B 6	Picture graphs	14	10.77	76.8
B 7	Single-column tables	15	9.52	63.5

Grade 4

N=277				
B 6	Picture graphs	14	11.97	85.5
C 8	Picture graphs	15	7.45	49.7
C 9	Bar graphs	12	8.92	74.3
N=267				
B 5	Measurement: distance	12	10.08	84.0
C 2	Semipictorial symbols	14	8.83	63.1
C 7	Measurement: distance	15	7.98	53.2

Grade 5

Wisconsin Tests of Reading Skill Development: Level C

Level		No. of Items	Raw Score Mean	Mean % Correct
N=274				
B 3	Picture grid	12	10.26	85.5
C 4	Street grid	12	7.46	62.2
D 3	Number-letter grid	15	9.69	64.6
N=281				
D 4	Cardinal directions	15	8.81	58.7
D 6	Picture graphs	15	7.49	49.3
D 8	Circle graphs	12	6.85	57.1

Grade 6

N=247				
C 10	Multicolumn tables	15	11.15	74.3
A 9	Multicolumn tables	15	6.41	42.7
E 7	Multicolumn tables	20	8.40	42.0
N=272				
C 2	Semipictorial symbols	14	11.00	78.5
D 1	Nonpictorial symbols	14	9.69	69.2
E 1	Point and line symbols	15	7.35	49.0
N=248				
C 9	Bar graphs	12	9.84	82.0
D 7	Bar graphs	15	9.89	65.9
E 6	Bar graphs	20	10.00	50.0

V. Summary Statistics and Intercorrelations Among Scores: WTRSD

Study Skills, Reference Skills

Field Test Edition

Schools With Reading Achievement at or Above Grade Level

	Test	#Items	$\overline{X}$	$\overline{X}$%	S	r	%Mast		Correlation Matrix		
Grade 1									B10	B16	B19
Sitting 1	B10	15	12.10	81	4.22	.93	70	B10	---		
N = 473	B16	13	11.56	89	2.21	.81	79	B16	.319	---	
	C19	12	9.96	83	1.81	.58	63	C19	.121	.438	---
Grade 2									C12	C13	C18
Sitting 1	C12	18	14.05	78	4.17	.87	60	C12	---		
N = 443	C13	10	5.96	60	2.54	.71	30	C13	.416	---	
	C18	10	7.84	78	2.70	.87	72	C18	.451	.497	---
Grade 3									C12	C13	C18
Sitting 1	C12	18	15.66	87	2.81	.79	78	C12	---		
N = 466	D12	18	15.58	87	2.82	.79	77	D12	.667	---	
	E9	14	9.26	66	4.30	.90	43	E9	.508	.512	---
Sitting 2 N = 389	D24	24	19.57	82	3.77	.81	63				
Grade 4									D13	D22	E10
Sitting	D13	16	12.82	80	3.41	.84	68	D13	---		
N = 476	D22	12	9.33	78	2.36	.71	60	D22	.458	---	
	E10	16	9.66	60	3.84	.81	28	E10	.586	.374	---
Sitting 2 N = 394	D25	14	8.75	63	3.72	.83	28				
Grade 5									E23	E25	F14
Sitting 1	E23	12	8.08	67	2.96	.78	40	E23	---		
N = 494	E25	14	9.16	65	3.10	.74	26	E25	.606	---	
	F14	12	7.81	65	3.15	.81	39	F14	.556	.571	---
Sitting 2 N = 387	E19	16	11.00	69	3.26	.75	41				
Grade 6									E11	F10	G11
Sitting 1	E11	16	12.18	76	3.30	.80	54	E11	---		
N = 418	F10	16	10.92	68	3.71	.82	43	F10	.572	---	
	G11	16	12.85	80	3.12	.81	66	G11	.571	.629	---
									E14	F13	G12
Sitting 2	E14	18	10.92	61	4.07	.81	23	E14	---		
N = 399	F13	20	14.98	75	2.95	.76	54	F13	.443	---	
	G12	18	13.22	73	3.38	.79	39	G12	.518	.664	---
Sitting 3 N = 361	F16	12	7.73	64	3.23	.81	37				

Non-Type I Schools With Reading Achievement at or Above Grade Level

	Test	#Items	X	X%	S	S%	R	Mast	Mast%
Level B									
Grade 1	8	10	9.77	97.7	.67	6.7	.55	88	97.8
N = 90	10	15	12.73	84.9	3.57	23.8	.91	66	73.3
	11	16	14.66	91.6	1.38	8.6	.49	81	90.0
	15	16	13.43	83.9	2.17	13.6	.64	63	70.0
	16	13	12.03	92.5	1.61	12.4	.71	78	86.7
		8	10	11	15	16			
	8	---							
	10	.059	---						
	11	.266	.353	---					
	15	.195	.334	.309	---				
	16	.028	.386	.308	.391	---			
Level C									
Grade 2	12	18	14.07	78.1	4.37	24.3	.89	63	64.3
N = 98	13	10	4.71	47.1	2.56	25.6	.70	18	18.4
	18	10	7.68	76.8	2.56	25.6	.82	65	66.3
	19	12	9.94	82.8	1.44	12.0	.36	54	55.1
	16	12	8.80	73.3	3.07	25.6	.83	53	54.1
		12	13	18	19	16			
	12	---							
	13	.070	---						
	18	.400	.443	---					
	19	-.009	.186	.144	---				
	16	.335	.491	.703	.180	---			
Level D									
Grade 3	12	18	15.24	84.7	2.83	15.7	.77	84	70.6
N = 119	13	16	9.50	59.4	4.37	27.3	.86	37	31.1
	14	12	8.66	72.2	3.21	26.7	.85	64	53.8
	15	12	7.09	59.1	2.82	23.5	.72	27	22.7
	17	12	8.52	71.0	2.85	23.7	.79	57	47.9
	22	12	6.99	58.2	3.38	28.2	.83	37	31.1
	24	24	18.19	75.8	3.95	16.4	.78	59	49.6
	25	14	6.30	45.0	3.16	22.6	.71	7	5.9

Level D	Test	#Items	X	X%	S	S%	R	Mast	Mast%
		12	13	14	15	17	22	24	25
	12	---							
	13	.431	---						
	14	.293	.557	---					
	15	.323	.540	.366	---				
	17	.294	.496	.474	.490	---			
	22	.319	.602	.535	.621	.500	---		
	24	.478	.539	.566	.502	.377	.631	---	
	25	.337	.466	.446	.600	.473	.616	.473	---
Level E									
Grade 4	9	14	11.09	79.2	3.04	21.7	.81	71	60.7
N = 117	10	16	9.75	60.9	3.88	24.2	.81	33	28.2
	11	16	9.56	59.7	3.58	22.4	.76	23	19.6
	12	16	7.25	45.3	3.52	22.0	.74	13	11.1
	14	18	7.55	41.9	3.56	19.8	.73	7	6.0
	15	14	8.64	61.7	3.13	22.3	.73	26	22.2
	19	16	8.98	56.1	3.48	21.7	.74	22	18.8
	23	12	5.74	47.8	2.65	22.1	.66	10	8.5
	25	14	6.55	46.8	2.82	20.1	.63	8	6.8

	9	10	11	12	14	15	19	23	25
9	---								
10	.611	---							
11	.493	.544	---						
12	.483	.541	.487	---					
14	.281	.302	.412	.331	---				
15	.417	.477	.366	.419	.341	---			
19	.423	.522	.495	.512	.363	.489	---		
23	.335	.449	.344	.504	.369	.525	.577	---	
25	.293	.399	.277	.456	.332	.422	.537	.591	---

	Test	#Items	X	X%	S	S%	R	Mast	Mast%
Level F									
Grade 5	10	16	10.25	64.1	3.59	22.4	.78	37	33.3
N = 111	11 & 15	12	10.27	85.6	2.46	20.5	.83	82	73.9
	12	20	14.48	72.4	2.72	13.6	.67	40	36.0
	14	12	8.39	69.9	2.77	23.1	.76	46	41.4
	16	12	7.24	60.3	2.99	24.9	.76	28	25.2
	19	12	5.82	48.5	2.94	24.5	.74	18	16.2

	10	11	13	14	16	19
10	---					
11	.052	---				
13	.306	.242	---			
14	.359	.263	.359	---		
16	.422	.199	.489	.528	---	
19	.336	.072	.356	.261	.508	---

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